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# Investment Case for Tobacco Control in

# Pakistan

## The case for scaling-up WHO FCTC implementation

# Investment Case for Tobacco Control in Pakistan

More than

**170,000**

Pakistanis die every year due to tobacco-related illness, accounting for


**11%** of all deaths in the country.

Investing now in five proven tobacco control measures will prevent more than

**534,000 deaths**

and avert

**PKR 1.0 trillion**

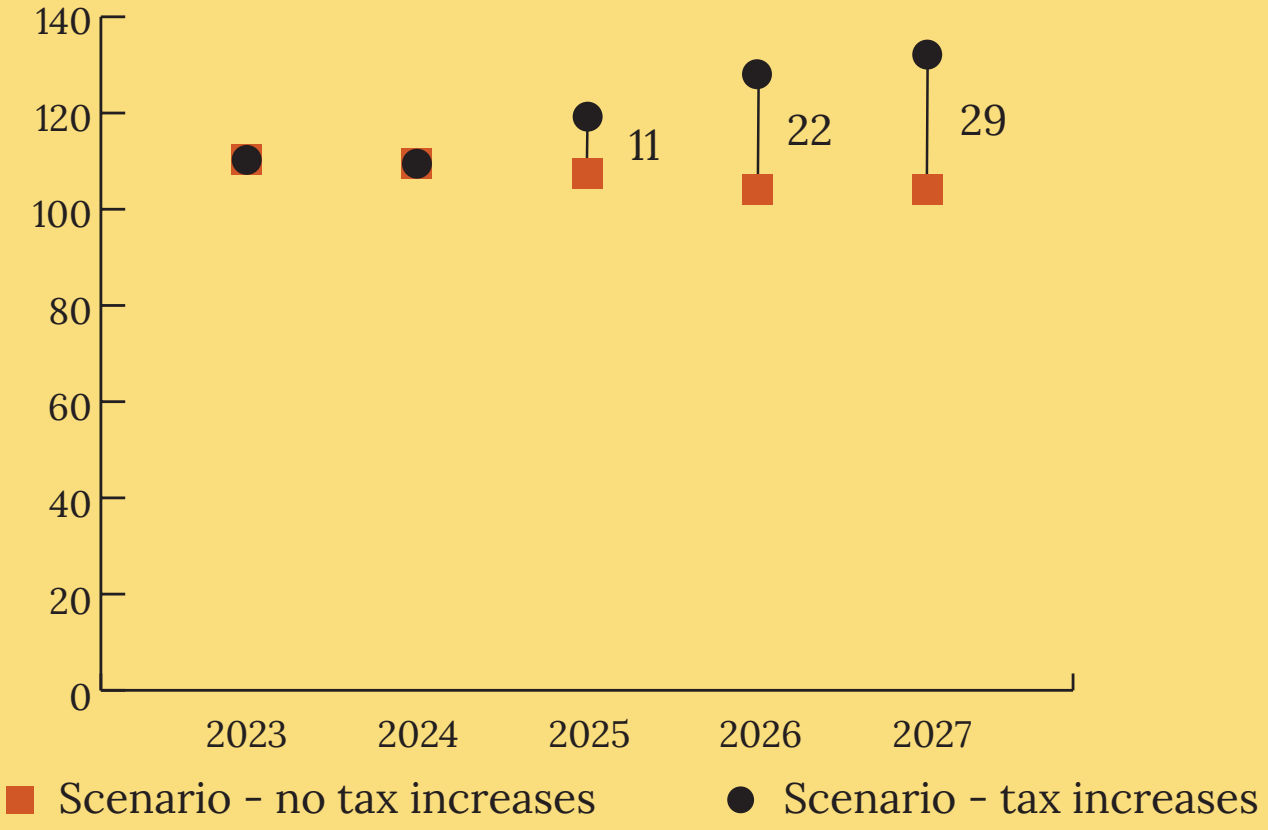
in economic losses by 2037.

Tobacco-attributable economic losses are about

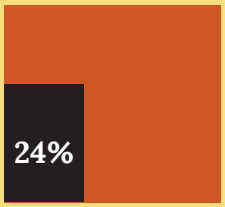
**4 times larger**

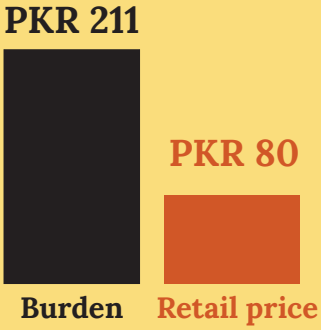
than the collected government revenue.

## Additional annual tax revenue (in PKR billions) in comparison to the baseline scenario, 2023-2027




## Government tobacco tax revenue as a % of the tobacco burden




## Burden per licit cigarette pack sold versus retail price of most sold brand (PKR)

**Tobacco costs Pakistan PKR 480 billion every year, equivalent to 1.0% of annual GDP.**

## Costs per adult smoker

**PKR 32,000**

Figures subject to rounding.

# Acknowledgements

This report was completed through collaborative efforts of the Pakistan Ministry of National Health Services, Regulations and Coordination, the United Nations Development Programme (UNDP), the Secretariat of the WHO Framework Convention on Tobacco Control, and the World Health Organization (WHO). The investment case report has been made possible through the financial support of the WHO Regional Office for the Eastern Mediterranean (EMRO).

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This tobacco control investment case highlights the enormous costs of tobacco in Pakistan and the set of recommended policy actions that will deliver substantial economic and public health benefits to the country. The implementation of effective tobacco control policies from the WHO Framework Convention on Tobacco Control can play an important role in strengthening sustainable development in Pakistan.

*Photo: © World Bank*

# Executive summary

## Overview

Tobacco is a significant threat to health and sustainable development. Tobacco causes premature death and preventable disease that results in high health costs and economic losses, widens socioeconomic inequalities, and impedes progress towards the achievement of the Sustainable Development Goals (SDGs).

This report summarizes the costs and benefits—in health and economic terms—of implementing five key policy actions of the WHO Framework Convention on Tobacco Control (WHO FCTC) that focus on demand reduction measures. The five actions are:

1) Increasing tobacco taxation to reduce the affordability of tobacco products (*WHO FCTC Article 6*);
2) Creating smoke-free public and work places to protect people from the harms of tobacco smoke (*WHO FCTC Article 8*);
3) Implementing plain packaging of tobacco products (*WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13*);
4) Enacting and enforcing a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship (*WHO FCTC Article 13*); and
5) Promoting cessation of tobacco use and treatment for tobacco dependence by training health professionals to provide brief advice to quit tobacco use (*WHO FCTC Article 14*).

## Main findings

**In 2020, tobacco use in Pakistan imposed around 480 billion Pakistani rupee (PKR)[1] in economic losses. These losses are equivalent to 1.0 percent of Pakistan's gross domestic product (GDP).** They include a) **PKR 122 billion** in direct health-care expenditures to treat tobacco-related illness, b) tobacco-attributable mortality valued at **PKR 240 billion**, and c) **PKR 119 billion** in reduced workplace productivity from absenteeism and presenteeism. Productivity losses from current tobacco use in Pakistan, representing a quarter of all tobacco-related losses – show how tobacco use impedes development in Pakistan beyond health. Multisectoral engagement is required for effective tobacco control, and other sectors benefit substantially from the implementation of tobacco control measures that create healthier communities and a more productive labour force.

1 Figures subject to rounding.

**Every year, tobacco use kills more than 170,000 people in Pakistan,** with 63 percent of these deaths being premature, among people under the age of 70. About 18 percent of lives lost from tobacco use are due to exposure to secondhand smoke. Deaths from tobacco are entirely preventable.

**By acting now, the Government of Pakistan can reduce the national burden from tobacco use.** The investment case findings demonstrate that implementing five key evidence-based WHO FCTC policy actions would, over the next 15 years (2023-2037):

**Save more than 534,000 lives and reduce the incidence of disease.** The key WHO FCTC measures would contribute to **Pakistan's** efforts to achieve SDG Target 3.4, which aims to reduce by one third premature mortality (under age 70) from non-communicable diseases (NCDs) by 2030. Enacting the five key WHO FCTC policy actions would prevent **premature deaths** from the four main NCDs – cardiovascular diseases (CVD), diabetes, cancer, and respiratory disease – by 2030, in the equivalent of about **11 percent** of the needed reduction in premature mortality to achieve SDG Target 3.4.

**Avert PKR 1.0 trillion in economic losses over 15 years, coming from:**

- **PKR 252 billion** due to avoided workplace productivity losses. The tobacco-control actions should stimulate economic growth because fewer people 1) miss days of work due to disability or sickness and 2) work at a reduced capacity due to tobacco-related health issues.
- **PKR 257 billion in savings through avoidance of tobacco-attributable health-care expenditures.** Of this, the government would save PKR 85 billion in health-care expenditures and citizens would save PKR 138 billion in out-of-pocket health-care costs, with remaining savings accruing to other payers.
- **PKR 491 billion in averted economic costs from tobacco-attributed mortality.**

**Provide a return on investment (ROI) of 27:1.**[2] This means that economic benefits (PKR 1 trillion) significantly outweigh the costs of implementing the five WHO FCTC policy actions (PKR 37 billion). For each individual measure, increasing cigarette taxes will have the highest ROI (311:1), followed by enforcing TAPS bans (147:1), implementing plain packaging of tobacco products (42:1), enforcing smoke-free public places and workplaces (10:1), and cessation support by training health professionals to provide brief advice to quit tobacco use (1:1).

2 For every 1 PKR invested in the five key WHO FCTC policy actions today, Pakistan will avert PKR 11 in economic losses by 2027 and PKR 27 by 2037.

In addition to these main findings, the investment case separately examined the revenue-generating potential of cigarette tax increases. Under the examined scenario, committing to cigarette tax increases over the next five years could generate PKR 61 billion in government revenue, helping improve the government's fiscal position as it faces tremendous economic stress. This represents 12.3 billion annually, which is equivalent to about 13 percent of annual government health expenditures.

Increasing cigarette taxes in Pakistan will confer social benefits to all, but particularly the poor. Those with lower incomes are more likely to quit smoking when cigarette prices rise, helping them to avoid illness and catastrophic health-care expenditures [1]. During the first year of the modeled tax increase, 30 percent of the deaths averted from increasing cigarette taxes will be among the poorest 20 percent of the population. Cigarette tax increases would further benefit Pakistani people with lower incomes if the resulting government tax revenue were reinvested in further WHO FCTC implementation and national development priorities such as universal health coverage. There is potential for even greater revenue increases from increases in taxes for all tobacco products, not only cigarettes. Increasing tobacco taxes can support Pakistan advance progress towards the SDGs, reducing poverty while generating sustainable domestic revenue and stimulating economic growth and labour productivity [2].

## Recommendations

This report provides comprehensive recommendations that the Government of Pakistan can take to protect public health and realize the benefits of the WHO FCTC as a sustainable development accelerator, and it is not only focused on the five WHO FCTC policy actions modeled in this investment case.

## Recommendations

1. **Commit to fully implement the WHO FCTC in Pakistan**

2. **Strengthen tobacco tax structures and increase tax rates (WHO FCTC *Article* 6)**

3. **Implement and enforce the other four tobacco control policies studied in this investment case:**

   - **comprehensive policies to make all public and work places smokefree (WHO FCTC *Article* 8);**
   - **plain packaging of tobacco products (WHO FCTC *Guidelines for implementation of Article* 11 *and* WHO FCTC *Guidelines for implementation of Article* 13);**
   - **strengthened tobacco advertising, promotion and sponsorship (TAPS) bans that close loopholes (WHO FCTC *Article* 13); and**
   - **scale up of brief advice to quit for tobacco users in primary care clinics ( (WHO FCTC *Article* 14).**

4. **Strengthen multisectoral coordination for tobacco control in Pakistan and encourage the participation of civil society in WHO FCTC implementation (WHO FCTC *Articles* 5.2*(a) and* 4.7)**

5. **Develop a national tobacco control strategy (WHO FCTC *Article* 5.1)**

6. **Implement measures to protect public health policies from the commercial and other vested interests of the tobacco industry (WHO FCTC *Article* 5.3)**

7. **Fully implement the Protocol to Eliminate Illicit Trade in Tobacco Products, including by building capacity to combat illicit trade (WHO FCTC *Article* 15 *and Protocol to Eliminate Illicit Trade in Tobacco Products*)**

8. **Support health-promoting and economically viable alternatives to tobacco farming(WHO FCTC *Article* 17 *and* 18)**

9. **Identify opportunities to link the implementation of the WHO FCTC with wider sustainable development strategies**

The Secretariat of the WHO FCTC, the United Nations Development Programme (UNDP) and the World Health Organization (WHO) stand ready to support the **Government of Pakistan** to reduce the tobacco-induced social, economic, and environmental burdens through the implementation of evidence-based tobacco control laws and policies.

**Table ES1. Summary of the main results of the Investment Case for Tobacco Control in Pakistan 2023-2037***

**Every year, tobacco use causes:**

- More than 170,000 deaths.
- PKR 122 billion in health-care expenditures.
- PKR 119 billion in workplace productivity losses.
- Tobacco-attributable mortality valued at PKR 371 million.
- Total social and economic losses equivalent to 1% of GDP in 2019.

**Implementing the modeled WHO FCTC measures now would, over the next 15 years:**

- Prevent more than 534,000 deaths.
- Save PKR 257 billion in health-care expenditures.
- Generate economic benefits (PKR 1 trillion) that significantly outweigh costs (PKR 37 billion) of implementation and enforcement – a 27:1 return on investment.
- Prevent PKR 491 billion in losses due to tobacco-attributable mortality.
- Prevent PKR 252 billion in workplace productivity losses.

* Figures subject to rounding

# 1. Introduction

The tobacco epidemic is one of the greatest public health threats the world has faced, killing more than 8 million people a year, including some 1.2 million deaths from exposure to secondhand smoke [3]. Tobacco use is a main risk factor for non-communicable diseases (NCDs) including cardiovascular disease (CVD), diabetes, cancer and chronic respiratory disease, as well as a cause of many other diseases [4]. In Pakistan, 35 percent of men and 8 percent of women use any form of tobacco product [5], leading to more than 170,000 deaths every year [6]. About 63 percent of those deaths occur among those under age 70 [6].

In addition to the cost to health and well-being, tobacco also imposes a heavy economic burden throughout the world. A 2018 study (based on 2012 data) found that the costs of smoking[3] were equivalent to 1.8 percent of the world's annual gross domestic product (GDP). Almost 40 percent of the costs occurred in developing countries, highlighting the substantial burden these countries suffer [7].

Tobacco use reduces productivity by permanently or temporarily removing individuals from the labour market due to poor health [8]. When individuals die prematurely, the labour output that they would have produced in their remaining years is lost. In addition, individuals with poor health are more likely to miss days of work (absenteeism) or to work at a reduced capacity while at work (presenteeism) [9], [10]. The labour and health consequences affect not only smokers, but also the people in their households who often need to take time off from work to care for those with tobacco-related diseases.

Tobacco use also displaces household expenditure that would otherwise go to fulfilling basic needs, including food and education [11]–[13], and it contributes to hunger and impoverishment of families [14], [15]. The use of tobacco imposes health and socio-economic challenges on vulnerable populations including the poor, women and young people [16].

Tobacco production causes environmental damage including soil degradation, water pollution, and deforestation [17]–[19]. Tobacco's annual climate change impact is comparable to entire countries' emissions and represents 0.2 percent of the global total. As a result of the shift of tobacco production from richer countries to lower income countries its environmental impacts are now mostly borne by developing regions. By depleting these countries' valuable resources, and polluting and damaging their ecosystems, tobacco puts their livelihoods and development at risk [17]–[19].

3 Defined as either "direct costs" such as hospital fees or "indirect costs" representing the productivity loss from morbidity and mortality. The figure here represents these combined costs.

Given the far-reaching health and development impacts of tobacco, and the multi-sectoral nature of the interventions required, effective tobacco control needs the engagement of non-health sectors to be operating in support of a whole-of-government and whole-of-society approach to policy making and implementation of the WHO Framework Convention on Tobacco Control (WHO FCTC).

The WHO FCTC was developed in response to the globalization of the tobacco epidemic and is an evidence-based treaty that reaffirms the right of all people to the highest standard of health. The Convention represents a milestone for the promotion of public health and provides new legal dimensions for international health cooperation. Pakistan ratified the WHO FCTC in 2004 and became a Party to the treaty in 2005 [20].

Pakistan also became a Party to the Protocol to Eliminate Illicit Trade in Tobacco Products in 2018. The Protocol is an international treaty that builds upon Article 15 of the WHO FCTC, with the objective of eliminating all forms of illicit trade in tobacco products through a package of measures to be taken by countries acting in cooperation.

Tackling tobacco use across the world is a priority within the 2030 Agenda for Sustainable Development. Tobacco control is relevant to the achievement of many Sustainable Development Goals (SDGs), particularly SDG 3.4 Target that calls for action to achieve a one-third reduction in premature mortality from NCDs by 2030. Target 3.a is a means of implementation of SDG 3.4 and calls for strengthened implementation of the WHO FCTC. But beyond health, tobacco control is also a proven approach to reduce poverty and inequalities, strengthen and expand the economy and advance sustainable development more broadly. Tobacco control is an SDG accelerator as it can contribute to many goals simultaneously across the economic, social, and environmental spheres [21]. In addition, reducing tobacco use is a one of the nine targets of the WHO Global action plan for the prevention and control of Non-communicable Diseases 2013–2030 [22].

**Box 1. 2030 Agenda for Sustainable Development**

In 2015, all UN Member States adopted the 2030 Agenda for Sustainable Development, outlining peace and prosperity. The core components of the Agenda are the 17 Sustainable Development Goals (SDGs) which are an urgent call for all countries to act together, recognizing that efforts to address poverty, inequalities, health, education, economy and climate change must be done in unison [23].

Pakistan's recognition of the importance of tobacco control predates its ratification of the WHO FCTC in 2004, having implemented its first tobacco control regulation, the Cigarettes (Printing of Warning) Ordinance in 1979, followed by the Prohibition of Smoking in Enclosed Places and Protection of Non-Smokers Health Ordinance in 2002 [24]. Pakistan has passed around twenty additional ordinances and amendments since 2002 to strengthen tobacco control in the country.

In 2016, an impact assessment for the implementation of the WHO FCTC was conducted in Pakistan. The impact assessment recognized the tobacco control success in Pakistan and improvements in implementing the WHO FCTC. These included developing a national coordination mechanism (NCM), linking the WHO FCTC with NCD strategies and increasing transparency of government interactions with the tobacco industry [25]. Still, the WHO FCTC remains to be fully implemented in Pakistan. Pakistan's young population [26] and growing incomes [27] make it a prime target of tobacco industry market expansion and more vulnerable to increases in tobacco use [28], highlighting the importance of scaling-up tobacco control now to protect future generations. Several key demand reduction measures within the WHO FCTC remain to be implemented and some require strengthening. Opportunities for Pakistan to improve implementation of the WHO FCTC include: strengthening tobacco tax structures and increasing tax rates; creating smoke-free public places and workplaces; implementing plain packaging; closing loopholes in tobacco advertising, promotion and sponsorship (TAPS) legislation and ensuring robust enforcement; and training health professionals to provide brief advice to quit tobacco use. Realizing the full benefits of all of the above measures depends on concerted and coordinated efforts from multiple sectors of government with support from civil society.

In 2021, the Secretariat of the WHO FCTC, UNDP, and WHO undertook a virtual joint mission with partners in Pakistan to initiate an investment case Investment cases for tobacco control analyse the health and economic costs of tobacco use as well as the opportunities for potential gains from scaled-up implementation of key WHO FCTC measures. It identifies which WHO FCTC demand reduction measures are likely to produce the largest health and economic returns for Pakistan, based on the return on investment (ROI). Taking into account the current implementation of WHO FCTC measures in Pakistan, the investment case models the impact of the following five key WHO FCTC provisions:

1. **Increase tobacco taxation to reduce the affordability of tobacco products.** *(WHO FCTC Article 6)*
2. **Enforce smoke-free public and work places to protect people from the harms of tobacco smoke.** *(WHO FCTC Article 8)*
3. **Implement plain packaging[4] of tobacco products.** *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*
4. **Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship.** *(WHO FCTC Article 13)*
5. **Scale up of brief advice to quit for tobacco users in primary care clinics** *(WHO FCTC Article 14)*

**Chapter 2** of this report provides an overview of tobacco control in Pakistan, including tobacco use prevalence as well as challenges and opportunities. **Chapter 3** summarizes the methodology of the investment case (see the annex on methodology and the separate Technical Appendix, available upon request, for more detail). **Chapter 4** reports the main findings of the economic analysis. **Chapter 5** details the results of complementary analyses examining equity considerations of increasing tobacco taxes, as well as the projected impact on government revenue. Further, it also details the contribution of the WHO FCTC demand reduction measures to meeting SDG Target 3.4 to reduce premature mortality due to NCDs by one third by 2030. **Chapter 6** summarizes the results and provides recommendations to the government to further tobacco control. The annex provides information on the methods underlying the various analyses described in the report.

4 Plain (or standardized) packaging is defined as "measures to restrict or prohibit the use of logos, colours, brand images or promotional information on packaging other than brand names and product names displayed in a standard colour and font style". Further information is available at: Guidelines for implementation of Article 11 of the WHO Framework Convention on Tobacco Control (decision FCTC/COP3(10)) November 2008. Available from: https://fctc.who.int/publications/m/item/packaging-and-labelling-of-tobacco-products, and Guidelines for Article 13 of the WHO Framework Convention on Tobacco control, available at: https://fctc.who.int/publications/m/item/tobacco-advertising-promotion-and-sponsorship

# 2. Tobacco control in Pakistan: status and context

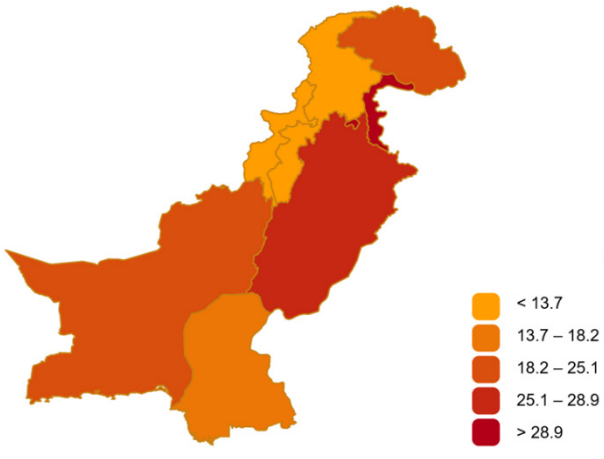
## 2.1 Tobacco use prevalence, social norms, and awareness-raising

According to the most recent Demographic and Health Surveys (2017–2018), 35 percent of men 15–49 years old are current users of any type of tobacco, as compared with 7.8 percent of women in this age range [5]. Cigarettes are the most common smoked tobacco product, with 22 percent of men reporting being cigarette smokers and 3.4 percent of women. Smokeless tobacco use is also prevalent, though less common, and the use of any type of smokeless tobacco is higher among men (14.6 percent) than among women (3.4 percent). Chewing tobacco is the most used form of smokeless tobacco, followed by betel quid [5].

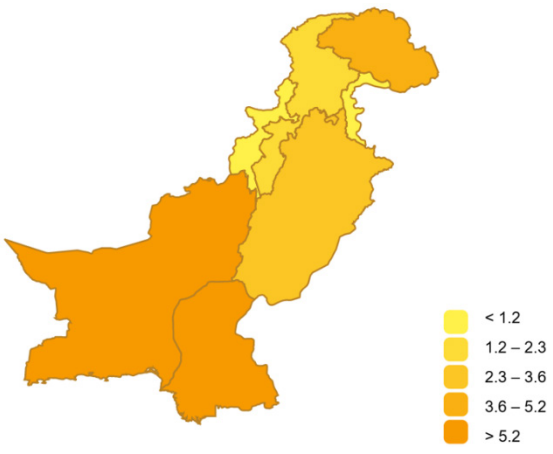
Cigarette smoking among adults varies considerably across regions, as illustrated in **Figure 1**. Among men, Azad Kashmir is the region with the highest cigarette smoking prevalence (31 percent) while the Federally Administered Tribal Areas have the lowest prevalence of smokers among both men and women (11.3 and 0.8 percent respectively). Sindh and Balochistan are the regions with the highest cigarette smoking prevalence among women (5.7 and 5.5 percent respectively).

**Fig. 1: Percentage of men and women who smoke cigarettes, by region in Pakistan, 2017-2018**

A.Men




B. Women

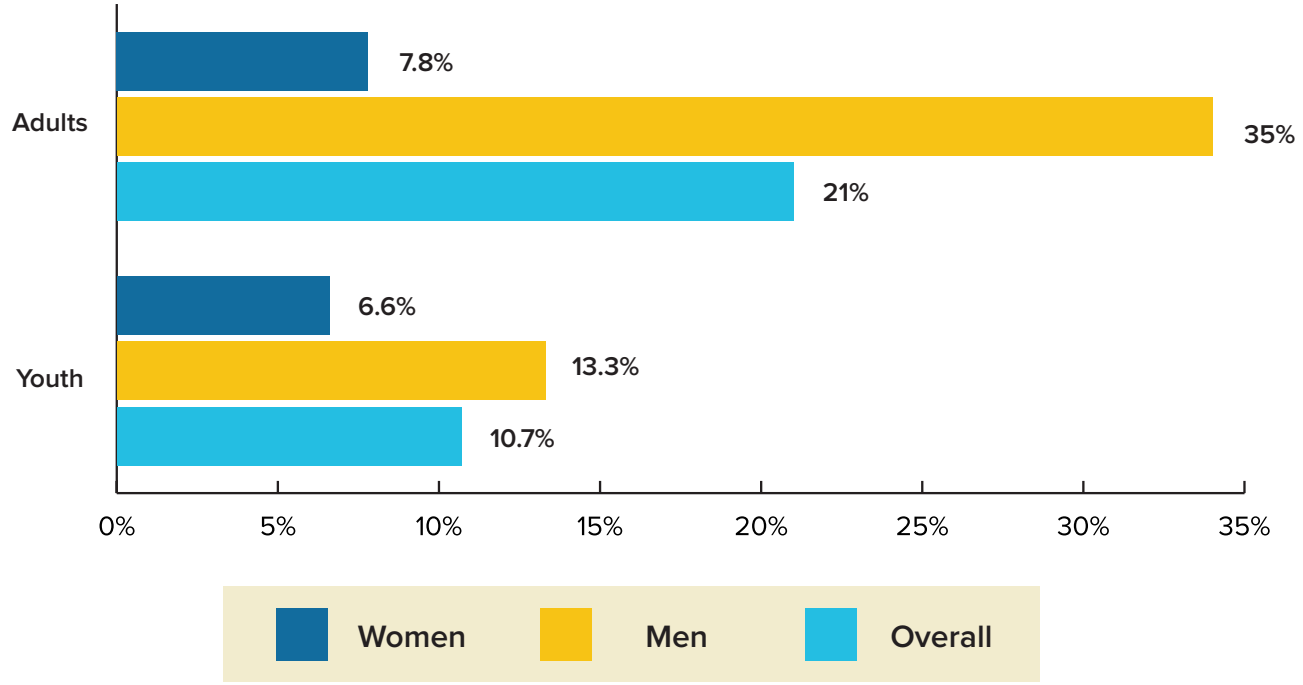



*Source:* The data in these figures are from Pakistan Demographic and Health Survey 2017-2018 [5]. Smoking prevalence used in models in the investment case is from the 2014 GATS Report [30].

Tobacco smoking is highest among women and men with less educational attainment. More males and females with no education (25 and 6.2 percent respectively) smoke tobacco compared to males and females with a high school education (21 and 2.7 percent respectively) [5]. Similarly, tobacco smoking tends to become increasingly common with age. For women, prevalence steadily increases from 3.0 percent among those 15-19 years old to 7.0 among those 40-44 years old, before decreasing slightly among the 45-49 age group. For men it increases from 1.6 among those 15-19 years old to 33 percent among those 45-49 years old [5].

According to the most recent Global Adult Tobacco Survey, in 2014 more than two thirds of adults aged were exposed to secondhand smoke at work and half were exposed to secondhand smoke at home [30]. Around 25 percent of current smokers try to quit tobacco every year, of which 2.6 percent succeed; these rates are particularly low compared to other countries [31].

**Fig. 2: Proportion of current tobacco users among adults and youth**




*Data on youth tobacco prevalence comes from Pakistan GYTS 2013 [32] and data on adults comes from the Demographic and Health Surveys, 2017-18 [5].*

According to the most recent Global Youth Tobacco Survey (GYTS) 2013 [32], 10.7 percent of students aged 13-15 years old consume tobacco (13.3 percent of boys and 6.6 percent of girls) (**Figure 2**). While the sale of tobacco is banned to individuals under 18 years old in Pakistan, 88 percent of surveyed students who are current tobacco smokers were able to obtain cigarettes from a store, a pharmacy, a school canteen, a street vendor or a kiosk [32]. Smoked tobacco is more common among students (7.2 percent) than smokeless tobacco (5.3 percent). However, smokeless tobacco is more common than smoking cigarettes with 3.3 percent of students who smoke cigarettes. More than one third, 38 percent of students were exposed to secondhand smoke inside enclosed public places, while 21 percent were exposed at home [32].

Making tobacco products less affordable is one of the best ways to control tobacco use, and young people are particularly sensitive to the price of tobacco [33]. Higher tobacco prices from tax increases can make smoking too costly for young people and reduce the incentive to start or continue to smoke. A 2021 study demonstrated that higher tobacco prices, such as through tax increases, are associated with a decreased risk of smoking initiation among youth and young adults [34].

### Box 2. Tobacco and gender

While worldwide women and girls tend to use tobacco at lower rates than men, they can still be subjected to the harms of tobacco use—including exposure to secondhand smoke [35] and the effects of household income diverted to tobacco use. Since tobacco use prevalence is often lower for women than men, the tobacco industry see this as an opportunity to scale up marketing targeted at women and girls [36]. In Pakistan, 37 percent of women are exposed to secondhand smoke at work and 33 percent are exposed to it health-care facilities [30]. Moreover, 28 percent of girls are exposed to secondhand smoke inside enclosed public places and 18.2 percent at home [32]. Recent trends suggest tobacco use is increasing among girls in many countries of the world [37].

**Box 3. Tobacco and pregnancy**

Tobacco use during pregnancy imposes significant health risks on the fetus, infant and mother. It increases the likelihood of miscarriages, stillbirths, preterm births, low birth weight, birth defects, and sudden infant death syndrome, among others [38],[39]. Exposure to secondhand smoke during pregnancy also increases the risks of having low birthweight babies, in turn increasing the risk of a mother and child developing health issues [39]. In Pakistan, it is estimated that 40 percent of pregnant women are exposed to secondhand smoke, resulting in 17,000 still births a year [40]. Mothers face additional health risks as pregnant smokers are more likely to experience heart and lung complications than pregnant nonsmokers [41]. Despite the strong evidence, the tobacco industry continues to aggressively target women and girls [39]. It is estimated that the global prevalence of smoking during pregnancy is 1.7 percent [42].

## 2.2 National tobacco control legislation, strategy and coordination

Pakistan ratified the WHO FCTC in 2004 [20]. In 2018, Pakistan acceded to the Protocol to Eliminate Illicit Trade in Tobacco Products [43].

The main components of Pakistan's tobacco regulations are the Cigarettes (Printing of Warning) Ordinance, 1979 [44] and the Prohibition of Smoking in Enclosed Places of Non-Smokers Health Ordinance, 2002 [45]. The 1979 Ordinance requires health warnings on cigarette packages [44] and the 2002 Ordinance includes measures to restrict smoking in certain public places like workplaces and service vehicles, require public workplaces to display no-smoking signage, prohibit tobacco advertising in all media and places, prohibit the sale of cigarettes and other smoking substances to those under 18 years old and prohibit the distribution of cigarettes and other smoking substances within 50 meters of a school, college or educational institution [45].

Since the 2002 Ordinance, there have been several amendments to strengthen tobacco control in Pakistan. These include, but are not limited to: expanding smoke-free places to include all public places including health-care facilities and educational institutions; prescribing guidelines for restricting tobacco advertisements, promotion and sponsorship; requirements for health warnings, such as those regarding the size, placement, pictures and rotation; prohibiting the sale of less than 20 cigarettes; and prohibiting the import of shisha (water-pipe) and related substances [46]. In 2003, one amendment instated the Committee on Tobacco Advertisement Guidelines; however, this amendment included a representative of the tobacco industry to be a member of the Committee [47]. Also, the contents and emissions of cigarettes in Pakistan are not regulated, and manufacturers do not have to disclose

information on the contents or emissions to the government [48].

There is no national strategy dedicated to tobacco control in Pakistan, and tobacco control is not heavily considered in existing strategies. While Pakistan's National Action Plan for NCD Prevention, Control and Health Promotion (2004) recognizes the urgency of tobacco control, more recent government development reports such as Pakistan's 2025 One Nation – One Vision (2014) [49], Pakistan in the 21st Century – Vision 2030 (2007) [50] and Pakistan's Implementation of the 2030 Agenda for Sustainable Development (2019) [51] do not consider tobacco use and the importance of tobacco control. Similarly, Pakistan's 12th Five Year Plan 2018-2023 [52] recognizes that the impact of smoking on NCDs has not been addressed adequately, but does not consider tobacco control.

Meeting the obligations of Article 5.2a of the WHO FCTC, Pakistan's Ministry of Health created the Tobacco Control Cell (TCC) in 2007, which is Pakistan's first coordinating mechanism for tobacco control and remains active. It aims to strengthen tobacco control measures, provide technical and administrative support, support research and dissemination and enhance engagement with non-governmental organizations (NGOs), media and academia. The TCC works at the national and subnational level, coordinating with provincial governments [25]. Despite progress in establishing tobacco control coordination, policies and laws, there remain WHO FCTC and Protocol obligations that are not yet fully implemented in the country.

## 2.3 The status of WHO FCTC demand-reduction measures

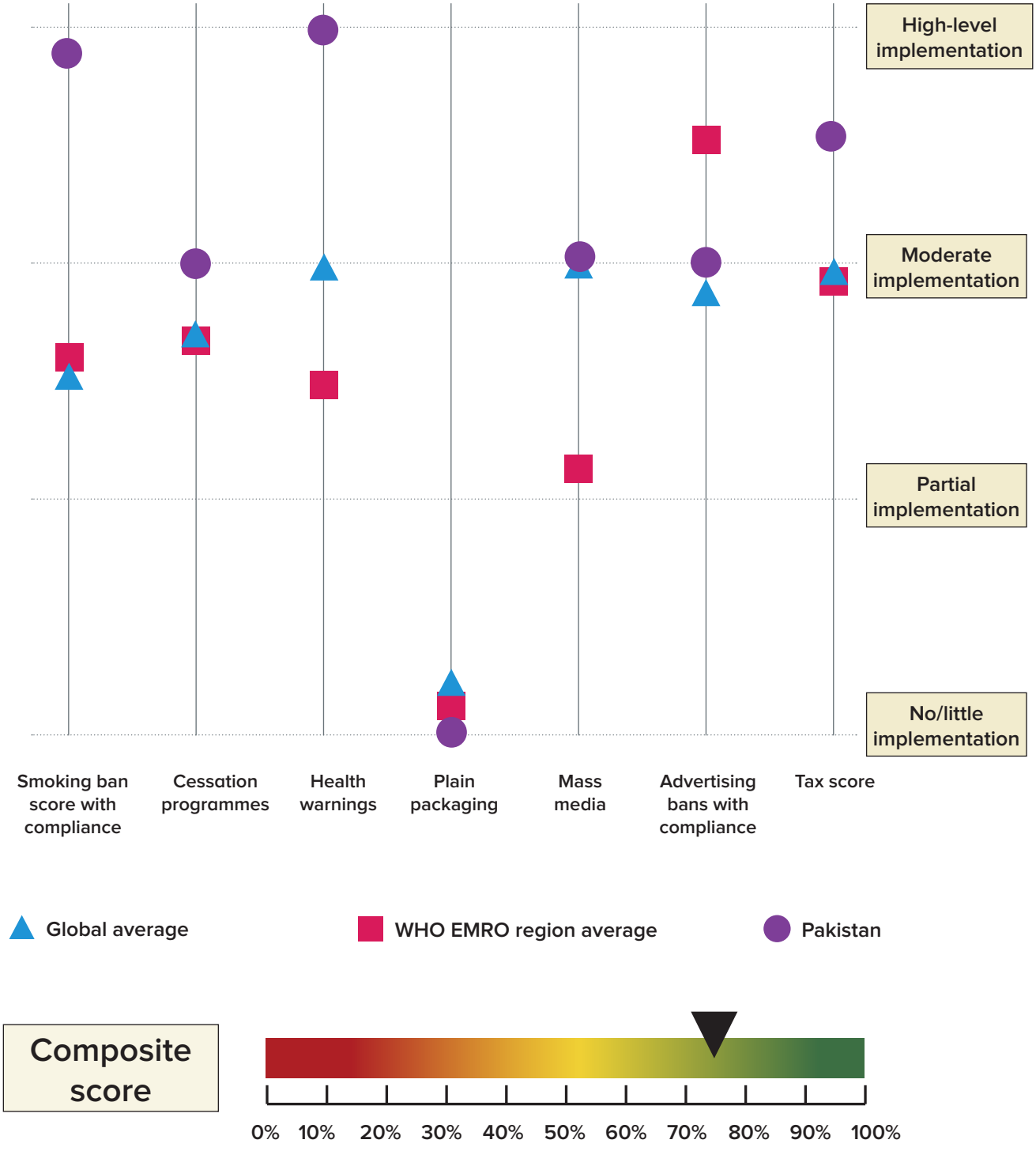
Strong fiscal and regulatory measures influence societal norms by signaling that tobacco use is harmful, not only for users but for the people around them—including family, colleagues, and workers.

While Pakistan has demonstrated progress implementing key demand reduction measures, 24 million people in Pakistan continue to use tobacco [29]. Implementing additional demand reduction measures or intensifying existing ones can draw Pakistan into closer alignment with the WHO FCTC and reduce the substantial costs imposed by tobacco use. Below, the status of each of the demand reduction measures in relation to WHO FCTC recommendations is discussed.

**Figure 3** summarizes the status of tobacco control demand reduction measures in Pakistan from the *WHO Report on the Global Tobacco Epidemic*, 2021 [53] and for each, progress toward meeting the WHO FCTC obligations. Overall, Pakistan is assessed to be 75 percent of the way toward fulfilling the key WHO FCTC demand reduction measures, above the global average of 53 percent.[5]

5 This composite score represents a status quo implementation level of tobacco control demand reduction measures developed intentionally for tobacco control investment cases.

**Fig. 3: Status quo implementation levels of WHO FCTC demand-reduction measures in Pakistan**




*Source: WHO Report on the Global Tobacco Epidemic, 2021 [53]*

## 1. Increase tobacco taxation to reduce the affordability of tobacco products (*WHO FCTC Article 6*)

In Pakistan, total taxes comprise about 61 percent of the retail price of the most sold brand of cigarettes. Tax on cigarettes consist of an ad valorem excise tax, a valued added tax (VAT), a general sales tax (GST) and a federal excise duty (FED), which is a specific excise tax [53]. The FED is the main tax used to curb tobacco consumption [54] and generates revenue equal to nearly 80 percent of the revenue from the tobacco sector [55].

The 2005 Federal Excise Act mandated the taxation of cigarettes and other tobacco products [56]. The FED applies a two-tier tax system on local cigarettes, where the share of retail price on cigarettes is around 41 percent and 58 percent for low and high-priced cigarettes respectively. The average specific excise tax as a total of retail price is 42 percent [53]. In 2020, the price of a pack of cigarettes of the most sold brand was the same as the price of the cheapest brand, PKR 80 [53], explaining this low average. Customs duty paid on imported tobacco products is 35 percent on an ad valorem basis [53]. The excise tax rate on cigars, cheroots,[6] cigarillos and imported cigarettes represents 65 percent of retail price and has not increased since 2010 [43]. From 2010 to 2020 overall there has been no change in the affordability of the most sold brand of cigarettes [53].[7]

In February 2023, the Government of Pakistan enacted the Finance (Supplementary) Act, 2023, containing provisions to further increase taxes including the FED on locally produced cigarettes [57], [58].

The Global Cigarette Tax Scorecard that assesses countries' cigarette tax policy performance gave Pakistan a score of 1.13 out of a maximum score of 5 in 2020 [59]. This is lower than the Eastern Mediterranean regional average of 1.99. Within the Tax Scorecard, Pakistan rated lowest on cigarette affordability[8] scoring zero for this component in 2020 [59].

There is substantial scope for action to reach what is considered in the WHO Report on the Global Tobacco Epidemic as a high-level of achievement, which is

6 Cheroot is a type of cigar according to Merriam-Webster at https://www.merriam-webster.com/dictionary/cheroot.

7 This 2023 tax increase was established after the modelling was done. Therefore, the baseline tax scenario used in the modelling was from the WHO Report on the Global Tobacco Epidemic, 2021 with total taxes representing 61 percent of the retail price of the most sold brand of cigarettes [53].

8 Measured as the percentage of a country's GDP per capita needed to buy 100 packs of the most sold brand of cigarettes [59].

for total taxes to represent at least 75 percent of the retail price [53]. On tax design for tobacco products, WHO makes a number of recommendations, including that governments should increase tobacco taxes significantly to reduce the affordability of tobacco products and automatically adjust specific tobacco taxes for inflation and income. Additionally, WHO recommends that governments have an excise tax that represents at least 70 percent of the retail price of tobacco products [60].

According to the WHO technical manual on tobacco tax policy and administration, uniform tax structures or mixed tax structures that rely on specific excise taxes are the most likely to lead to higher prices [60]. Similarly, according to the WHO FCTC Guidelines for implementation of Article 6, Parties to the Convention should consider specific or mixed excise tax systems, these guidelines also recommend a minimum specific tax floor [61]. Notably, as poorer populations are associated with higher smoking prevalence in Pakistan [62], they stand to benefit the most from tobacco tax increases. In addition, by merging the two current specific excise tax tiers into one tier, Pakistan will achieve a more optimal excise tax structure.

The investment case examines the impact of raising cigarette taxes to levels considered in the *WHO Report on the Global Tobacco Epidemic, 2021* as a high-level of achievement [53]. Beginning in 2023, the specific excise increases from current rates (PKR 33 per pack)[9] to PKR 48 in 2027. Additional specific excise taxes triggering real price increases of an average of 5.6 percent annually are modeled from 2028 to 2037, bringing the total tax share to 81 percent by the end of the analysis (see methodology annex for detailed information). Further economic gains will be made in Pakistan with substantial taxes increases on all tobacco products.

## 2. Create smokefree public and work places to protect people from the harms of tobacco smoke (*WHO FCTC Article 8*)

All public workplaces, public transport and outdoor waiting areas for transport are smoke-free, but smoking is permitted in hotel guest rooms. Some indoor public places and indoor workplaces are also not fully smoke-free, according to current legislation [63]. Additionally, stricter smoke-free laws may be implemented by sub-national jurisdictions [64].

According to the WHO Report on the Global Tobacco Epidemic, 2021 compliance with smoke-free laws is moderate in Pakistan (5 out of 10)[10] [53]. The investment

9 At the time of modelling.

10 Five national experts provided assessments of compliance with existing laws for the Global Tobacco Control Reports, including one senior government official in charge of tobacco control, one head of a non-governmental organization that works on tobacco control, one health professional, one academic, and one tobacco control focal point at the WHO country office.

case examines the impact of **enacting and fully enforcing comprehensive smoke-free measures for indoor public places and workplaces**.

### 3. Require tobacco packaging to carry graphic health warnings describing the harms of tobacco use *(WHO FCTC Article 11)*

**Health warnings** must occupy 60 percent of the pack and contain a picture and a text, the latter being placed on the front of the pack in Urdu and on the back of the pack in English [65], [66]. In 2015, the Ministry of National Health Services Regulations and Coordination (MoHSRC) requested to amend the law to a 85 percent coverage rate [67], but in 2017 the law was amended to only 60 percent [46]. Smokeless tobacco products and e-cigarettes do not require health warnings.

Given the requirements for the WHO FCTC Article 11 obligations are being met and there is a good level of implementation, this intervention has not been modeled in the investment case.

### 4. Implement plain packaging of tobacco products *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*

Pakistan currently does not mandate plain packaging of tobacco products. The investment case models the impact of implementing and enforcing **plain packaging** requirements.

### 5. Promote and strengthen public awareness about tobacco control issues and the addictive nature and harms of tobacco use through mass media information campaigns *(WHO FCTC Article 12)*

There has been a national campaign in Pakistan that aired between 1 July 2018 and 30 June 2020 [68]. Pakistan's TCC has put in place several mass media campaign initiatives on tobacco control. These include a 30 second public service message video encouraging smokers to quit by showing the health-related harms of tobacco; and a public service announcement that graphically illustrates the link between smoking and NCDs such as lung and oral cancers, strokes, and CVD [69]. The national mass media campaigns were, overall, conducted with five to six appropriate characteristics as recommended by WHO and the FCTC [53]. The TCC also released a documentary on tobacco control in collaboration with WHO around 2013 [70].

Given the existing good level of implementation in Pakistan of WHO FCTC Article 11 requirements, this intervention has not been modeled in the investment case.

### 6. Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship (*WHO FCTC Article 13*)

Pakistan bans all forms of direct tobacco advertising [53]. However, some forms of indirect advertising are permitted, including tobacco brand names on non-tobacco products and vice versa, and some forms of tobacco sponsorship including financial support and publicity of such support [53]. The investment case models the impact of closing remaining gaps that permit TAPS and ensuring full compliance with TAPS bans.

### 7. Scale up of brief advice to quit for tobacco users in primary care clinics (*WHO FCTC Article 14*)

There are some cessation services available in community settings in Pakistan that are partially covered by the government. However, there are no cessation services available in health clinics, primary care facilities, hospitals nor health professional offices. Nicotine Replacement Therapy (NRT) is sold in Pakistan, but it's not on the essential medicines list. There is no national toll-free quit line in Pakistan [68].

Several factors have been identified as challenges to tobacco cessation in Pakistan including availability and affordability of cigarettes, and that the perceived risk of smoking is low and the social environment is conducive to smoking [31].

The provision of brief advice to tobacco users from health-care professionals whenever they access health-care services (especially in the primary care setting) is also shown to be effective in supporting successful tobacco cessation [71] and represents a useful early step in rolling out support for tobacco users to quit. The investment case models the impact of training primary care health providers to identify tobacco users and to provide tobacco cessation advice (see the annex on methodology for detailed information). Further gains would be possible with the provision of further support to tobacco users, such as offering specialized tobacco dependence treatment services, a national toll-free quit line and/or internet based quit support and making pharmacotherapies more widely available (free of cost, if possible).

**Table 1** summarizes the existing state of WHO FCTC demand-reduction measures and compares them against a target that would represent a high level of implementation for each measure. The impact of each policy measure—individually and in combination—is described in **Annex Table A4**.

**Table 1: Summary of the current state of WHO FCTC demand reduction measures in Pakistan and modeled implementation targets based on the *WHO Report on the Global Tobacco Epidemic, 2021* [53]**

| Tobacco control policy | Pakistan baseline* | Modeled implementation target |
|---|---|---|
| **Increase tobacco taxation to reduce the affordability of tobacco products** *(WHO FCTC Article 6)* | Total tax share equivalent to 61% of the most sold cigarette brand. The excise tax share is equivalent to 42% of retail price.[11] | Increase total tax rates on cigarettes to at least 75% of the retail price. Implement regular tax increases to outpace inflation and income growth. |
| **Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke** *(WHO FCTC Article 8)* | Most public places and workplaces are smoke-free except for hotel guest rooms. Compliance is also reportedly low. | Enact and enforce comprehensive smoke-free requirements for indoor public places and workplaces. |
| **Implement plain packaging of tobacco products** *(WHO FCTC Guidelines for implementation for Article 11, and WHO FCTC Guidelines for implementation for Article 13)* | Plain packaging requirements are not currently in place | Implement and enforce plain packaging of tobacco products. |
| **Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship (TAPS)** *(WHO FCTC Article 13)* | All forms of direct advertising are banned, but some forms of indirect advertising are permitted. | Ban all forms of direct and indirect TAPS, with strengthened enforcement to ensure compliance |
| **Scale up of brief advice to quit for tobacco users in primary care clinics** *(WHO FCTC Article 14)*[12] | Tobacco cessation services are only available in some community settings and are only partially covered. There is no national toll-free quit line and NRT is not readily available. | Expand training of primary health-care providers to identify tobacco users and to provide tobacco cessation advice; implement the provision of tobacco cessation services at the primary care level. |

Source: WHO Report on the Global Tobacco Epidemic, 2021 [53].

11 The modelling was done before the tax increase from the Finance (Supplementary) Act, 2023, and as such is not included in the modelling.

12 The costs include: those to train health providers, the cost to health systems to deliver the brief interventions (inclusive of human resource time, facility overheads, etc.), and some programmatic costs

## 2.4 Tobacco use and the COVID-19 pandemic

The global coronavirus disease (COVID-19) pandemic has strained health systems worldwide, and the economic impact of the outbreak has been immense. According to WHO, evidence indicates that smokers are more likely to suffer more severe outcomes of COVID-19, such as admission into intensive care units and death, than never smokers. Furthermore, severe forms of COVID-19 or deaths due to COVID-19 are more frequent in people with comorbidities that are related to tobacco use, including chronic obstructive pulmonary disease, lung cancer and cardiovascular diseases [72]. Moreover, tobacco use is also proven to worsen the outcomes of other communicable diseases such as tuberculosis and HIV [73].

## 2.5 Illicit trade

Illicit trade in tobacco products poses a serious threat to public health. Illicit trade increases the accessibility and affordability of tobacco products, thus fuelling the tobacco epidemic and undermining tobacco control policies. It also causes substantial losses in government revenues, and at the same time contributes to the funding of transnational criminal activities [74]. Despite the tobacco industry's claims, changes in illicit tobacco trade levels are only very loosely connected with changes in tobacco taxes. Evidence suggests that increasing tobacco taxes does not necessarily lead to higher rates of illicit tobacco [75].

In 2016, the Federal Board of Revenue (FBR) implemented the Inland Revenue Enforcement Network (IREN), with the aim to monitor tobacco control and prevent tax evasion [43].There is also a functioning track and trace system in place [76] that can help address illicit trade of tobacco, although the system could be further strengthened in line with the Protocol. In June 2018, Pakistan acceded to the Protocol to Eliminate Illicit Trade in Tobacco Products, representing a milestone in the country's efforts to eliminate the problem of illicit tobacco [77]. The Protocol supplements the WHO FCTC with a comprehensive tool to counter and eventually eliminate illicit trade in tobacco products and to strengthen legal dimensions for international health cooperation.

## 2.6 Financing

According to the WHO Report on the Global Tobacco Epidemic, 2021, annual government expenditure on the national tobacco control programme in 2014 totaled PKR 3.6 million [53]. Pakistan also receives funding from international donors including the Bloomberg Initiative [78] and the International Monetary Fund (IMF) [76] for work on tobacco control.

## 2.7 Civil society

Civil society organizations (CSOs) such as the Network for Consumer Protection and the Coalition for Tobacco Control support tobacco control implementation by working with vulnerable groups, monitoring media and promoting research for policy development processes [25].

## 2.8 Industry presence and interference

Philip Morris Pakistan and Pakistan Tobacco Company account for 98 percent of the country's tobacco market [76]. The tobacco industry in Pakistan has a history of exerting considerable pressure on the Government of Pakistan. There are several examples of tobacco industry interference in Pakistan.

In 2007 government authorities initiated a project to build a modern track and trace system to prevent cigarette smuggling, but the plan failed due to heavy resistance from cigarette manufacturers [76]. However this delay was overcome and there is now a functioning track and trace system in Pakistan, as the IMF announced in 2021 that the system was a condition for Pakistan's US$6 billion package of international assistance [76].

In 2015, MoHSRC released a notification of an amendment of the law prescribing graphic health warnings with 85 percent coverage [67]. After much delay, the ordinance was amended in 2017 to mandate health warnings covering only 60 percent of the package [50]. A Reuters investigation in 2018 pointed to tobacco industry lobbying as the cause of the watering-down of the ordinance [79]. Moreover, the tobacco industry has been accused of manipulating health warning labelling by changing the appearance of graphics in the warning (i.e. throat cancer) compared to government mandated health labelling [80].

A World Bank study also examined the tobacco industry's role in the government's 2017 decision to reduce tobacco taxes [47]. The study found that the industry used tactics such as forestalling,[13] price over-shifting,[14] and over-estimation of the size of the illicit tobacco market in Pakistan as part of a years-long campaign to influence the 2017 decision and achieve a reduction in taxes and an increase in their profits [47]. As recently as 2022, the Society for the Protection Rights of the Child, an NGO operating in the country, reported that the tobacco industry unofficially and illegally raised prices by PKR 20, meaning they did not declare this price increase, which would cause PKR 80 billion in losses to the government [81].

13 Forestalling involves increasing the production or stock of a product in anticipation of a tax increase. It results in higher sales before a tax increase and lower sales (and lower government revenue) after as the oversupply is absorbed. The industry can then point to reductions in revenue as evidence of illicit trade [47].

14 Over-shifting increases the price of a pack of cigarettes above a tax increase, where consumers will tolerate it, delivering greater profit to tobacco companies. [47]

There are other examples of tobacco industry interference in Pakistan as well. The tobacco industry has engaged in corporate social responsibility (CSR) activity [82], creating significant barriers to effective tobacco control [83]. Further, Pakistan relies on tobacco companies to honestly declare their own production and under-reporting has persisted for some time [76], which undermines effective taxation in the country. According to Pakistan's Social Policy and Development Centre, allowing tobacco companies to self-declare has cost the country between US$143 and US$448 million in lost taxes between 2015 and 2018 [76]. Furthermore, government representatives have reportedly had previous or current relationships with the tobacco industry, and the Pakistan Tobacco Board, which operates under the Ministry of Commerce, has representatives of tobacco manufacturers as part of its board of directors [25]. Similarly, the Committee on Tobacco Advertisement Guidelines includes a representative of the tobacco industry as a member [47].

Pakistan has taken steps to limit tobacco industry interference. The tobacco industry lost its status as an observer during meetings [25] and measures have been adopted to promote greater transparency in any interactions between the government and tobacco industry [25]. Still, more action is needed to fully implement Article 5.3 of the WHO FCTC and protect public health policy from commercial and other vested interests of the tobacco industry.

Pakistan recently saw a modest improvement in its *Global Tobacco Industry Interference Index*[15] score and now ranks 17th out of 80 countries analysed (moving from a score of 50 in 2020 to 48 in 2021, in a ranking system where a lower score indicates less interference) [84]. Pakistan has an opportunity to go further with action to address the tobacco industry's negative influence on health and sustainable development through full implementation of the WHO FCTC.

## 2.9 Tobacco farming

Pakistan is a major tobacco-growing country in the world. The Pakistani government controls tobacco growing and marketing through the Pakistani Tobacco Board (PTB). According to the PTB website, there 50 000 tobacco growers across Pakistan, with 34,790 hectares under cultivation in 2021–2022 [85]. Although MoHSRC strives to implement Article 17 of the WHO FCTC to promote alternative livelihoods for tobacco farmers in Pakistan [86], there are difficulties achieving coherence among sectors outside of health. For example, the Ministry of Planning Development and Special Initiatives is concerned with modernizing and increasing the productivity of the tobacco sector in Pakistan [87].

15 The Global Tobacco Industry Interference Index measures efforts by governments to address tobacco industry interference. Available from: https://globaltobaccoindex.org/

It is also common for government officials and agencies to promote a narrative that positions the tobacco industry as an important driver of the economy In Pakistan [88]. However, evidence from the Social Policy and Development Centre suggests that these claims are overblown, citing that the cigarette industry only employs 0.2 precent of the industrial labour force and contributed to only 0.3 percent of GDP in 2019 to 2020 [55].

Tobacco farming puts farmers at serious risk of health complications, including green tobacco sickness (a type of nicotine poisoning) and pesticide poisoning [17]. Tobacco growing also has negative impacts on the environment [17]–[19]. Nonetheless, programmes that would help tobacco farmers make the transition to other health-promoting, economically viable alternatives to tobacco farming, in line with FCTC Articles 17 and 18, are thus far lacking [43].

*Photo: © UNDP*

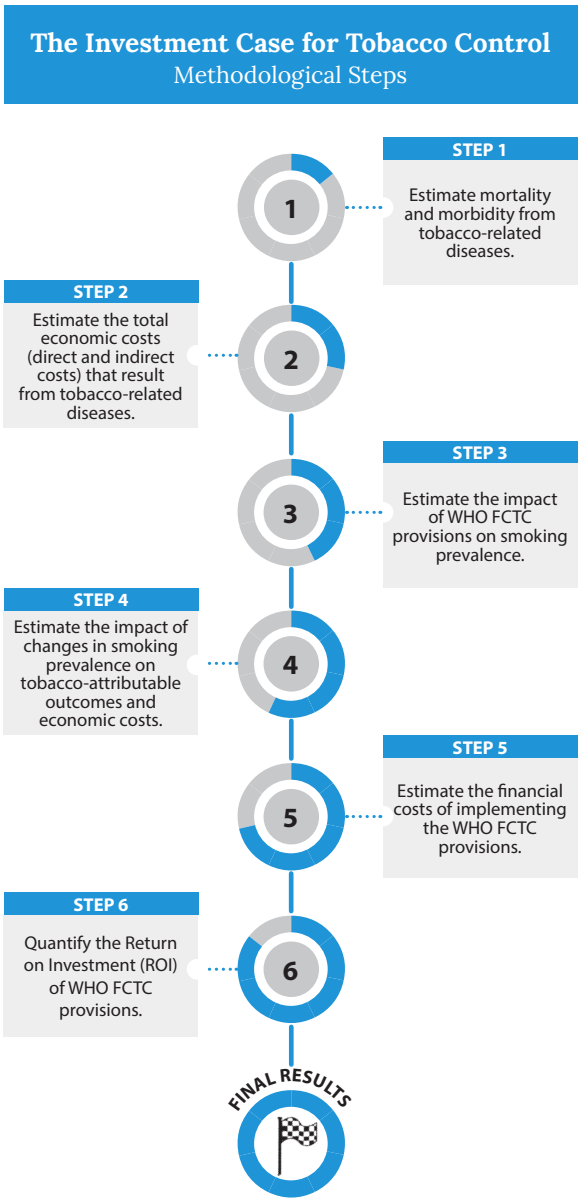
# 3. Methodology

The purpose of the investment case is to quantify the current health and economic burden of tobacco use in Pakistan (in the context of WHO FCTC measures that are currently in place), and to estimate the impact that implementing new WHO FCTC measures—or strengthening existing ones—would have on reducing this burden.

A static model was developed to conduct the investment case and to perform the methodological steps in **Figure 4**. This methodology has been used for previous national WHO FCTC investment cases under the FCTC 2030 project.

The tools and methods used to perform these steps are described in this report's annex on methodology. Interested readers are also referred to this report's separate Technical Appendix[16] for a more thorough account of the methodology. The investment case team worked with MoH and other stakeholders in Pakistan to collect national data inputs for the model. Where data was unavailable from government or other in-country sources, the team utilized publicly available national, regional, and global data from sources such as the WHO, the World Bank database, the Global Burden of Disease study by the Institute for Health Metrics and Evaluation (IHME), and academic literature. Within the investment case, costs and monetized benefits are reported in constant 2020 Pakistani Rupee (PKR) and discounted at an annual rate of 5 percent.

**Fig. 4: Building the Investment Case**




16 Available upon request.

# 4. Results

## 4.1 The current burden of tobacco use: health and economic costs[17]

In 2019, tobacco use caused an estimated 170,965 deaths in Pakistan, 63 percent of which were premature, i.e. occurred among those under 70 years [89]. These deaths amount to 3.1 million years of life lost (YLLs), which are lost productive years in which many of those individuals would have contributed to the workforce [89]. Monetizing YLLs due to tobacco use, the investment case identifies PKR 239.8 billion in losses due to tobacco-attributable mortality.

While the costs of the tobacco-attributable mortality are high, the consequences of tobacco use begin long before death. As individuals suffer from tobacco-attributable diseases (e.g., heart disease, strokes, cancers), expensive medical care is required to treat them. Spending on medical treatment for illnesses caused by smoking cost the government PKR 40 billion in 2020 and caused Pakistani citizens to spend PKR 65 billion in out-of-pocket (OOP) health-care expenditures. Private insurance and non-profit institutions serving households spent PKR 15.9 billion on treating tobacco-attributable diseases in 2020. In total, health-care expenditures attributable to smoking amounted to PKR 122 billion.

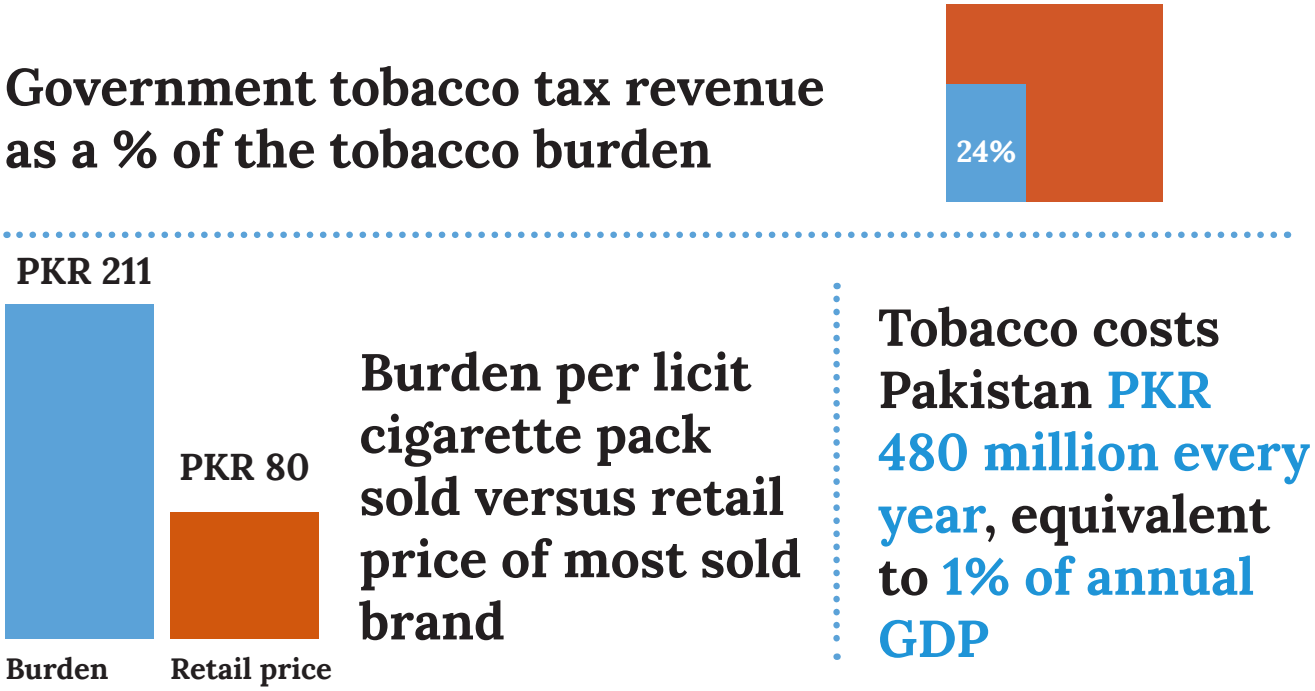
In addition to health-care costs, as people become sick, they are more likely to miss days of work (absenteeism) or to be less productive at work (presenteeism). In 2020, the cost of excess absenteeism due to tobacco-related illness was PKR 33 billion and the cost of presenteeism due to cigarette smoking was PKR 86 billion.

In total, tobacco use caused PKR 480 billion in economic losses in 2020, equivalent to about 1.0 percent of Pakistan's 2020 GDP. Figure 6 summarizes the current social and economic burden of tobacco use and contextualizes the losses. The burden of tobacco use far exceeds the revenue generated from taxing tobacco products. Tobacco-attributable social and economic losses are about four times as large as collected government revenue. Social and economic losses per licit cigarette pack sold equate to about PKR 211 per pack, outweighing the financial value—represented by the per pack price—that accrue in the value chain to growers, manufacturers, vendors, other supply chain stakeholders, and the government (through taxation).

17 In assessing the 'current burden' of tobacco use, the economic costs of tobacco-attributable mortality include the cost of deaths due to any form of exposure to tobacco (including smoking, secondhand smoke, and the use of other types of tobacco products). Only smoking-attributable (not tobacco-attributable) costs are calculated for health-care expenditures, absenteeism, and presenteeism. While other forms of tobacco may also cause losses in these categories, no data are available to precisely ascertain those losses.

Given the dominance of multinational corporations in the tobacco trade and the high-profit margins on cigarettes, much of the revenue profit from tobacco sales in Pakistan leaves the country and goes into the pockets of international shareholders.

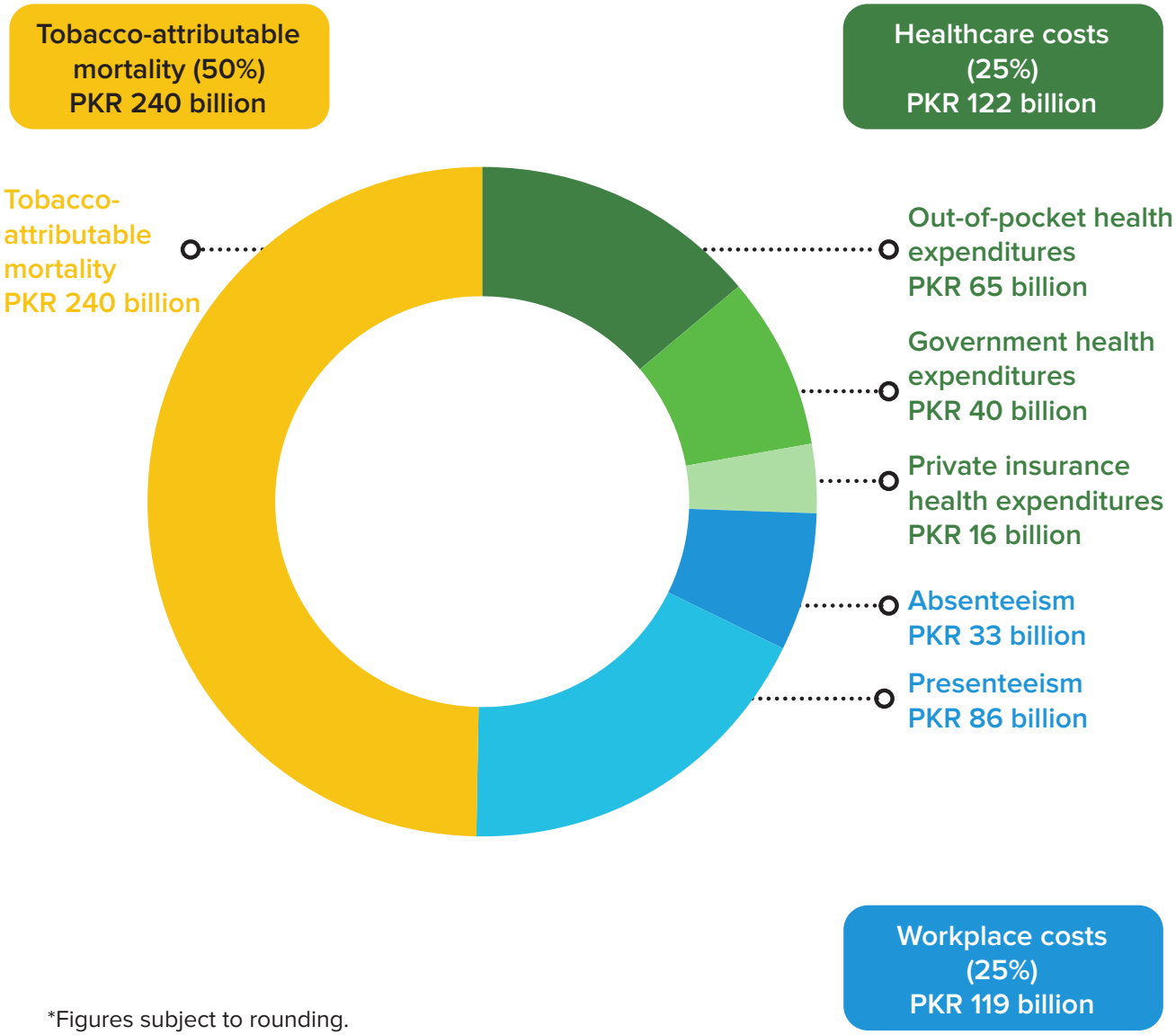
**Fig. 5: Contextualizing the burden of tobacco use in Pakistan, 2020***




*Figures subject to rounding. Tax revenue comparisons are provided for context and are not meant to suggest that taxes should be increased to levels that equalize revenue with the tobacco burden. Government cigarette tax revenue (PKR 113 billion in 2010) and the retail price of the most sold brand are from the WHO Report on the Global Tobacco Epidemic, 2021 [53]. The number of licit cigarette packs sold (2.3 billion) is estimated by dividing revenue estimates from the Pakistan Revenue Division Year Book 2020-2021 [90] by a weighted average of the specific excise tax rates for low and high tier cigarettes from the World Bank's Overview of Tobacco Use in Pakistan report [43].

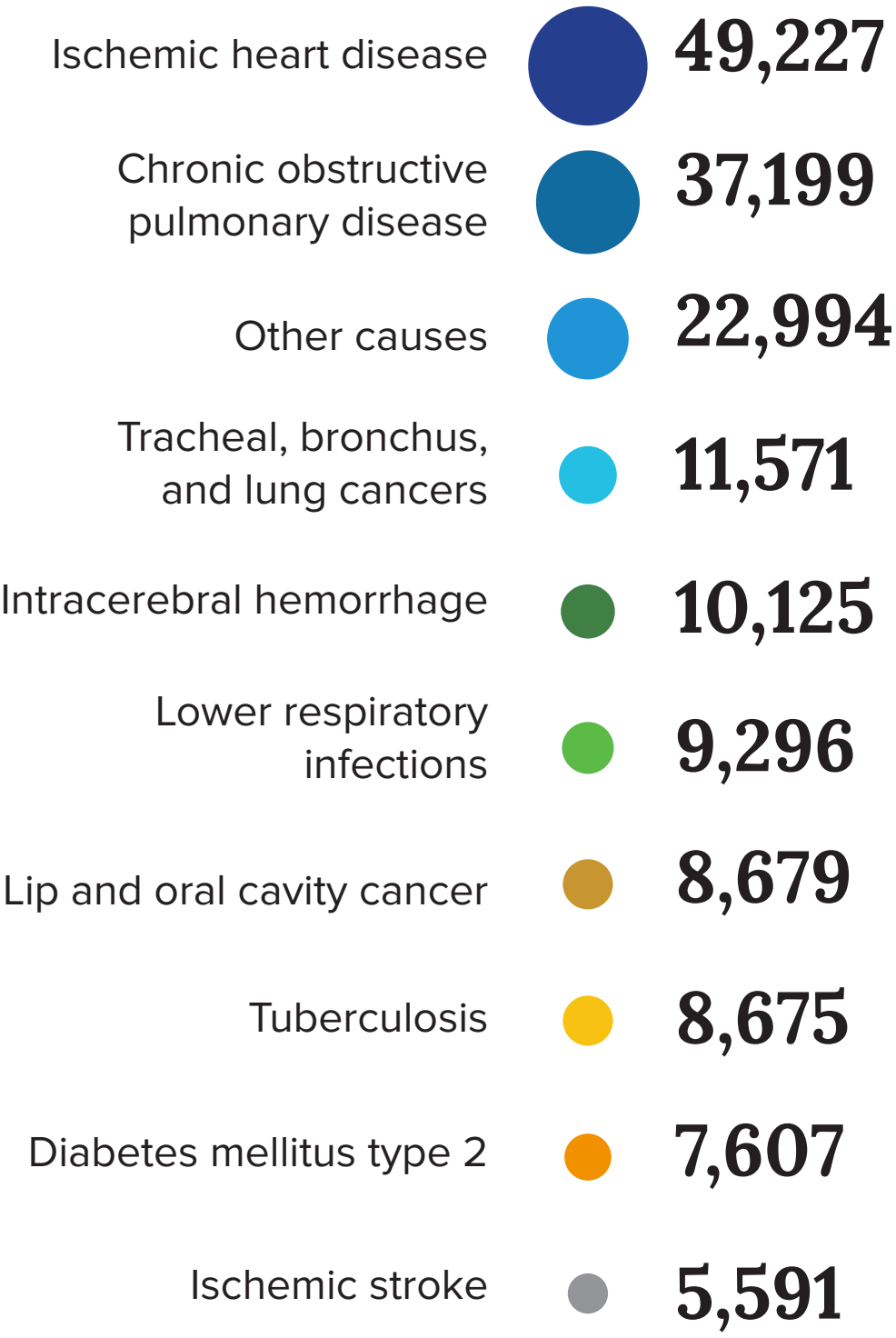
**Figure 6** illustrates the share of the burden attributable to tobacco-attributable mortality, workplace costs, and health-care costs. **Figure 7 and Figure 8** illustrate the annual health losses that occur due to tobacco use.

**Fig. 6: Breakdown of the share of the cost of tobacco-attributable mortality, workplace costs, and healthcare costs (PKR billions) in 2020***



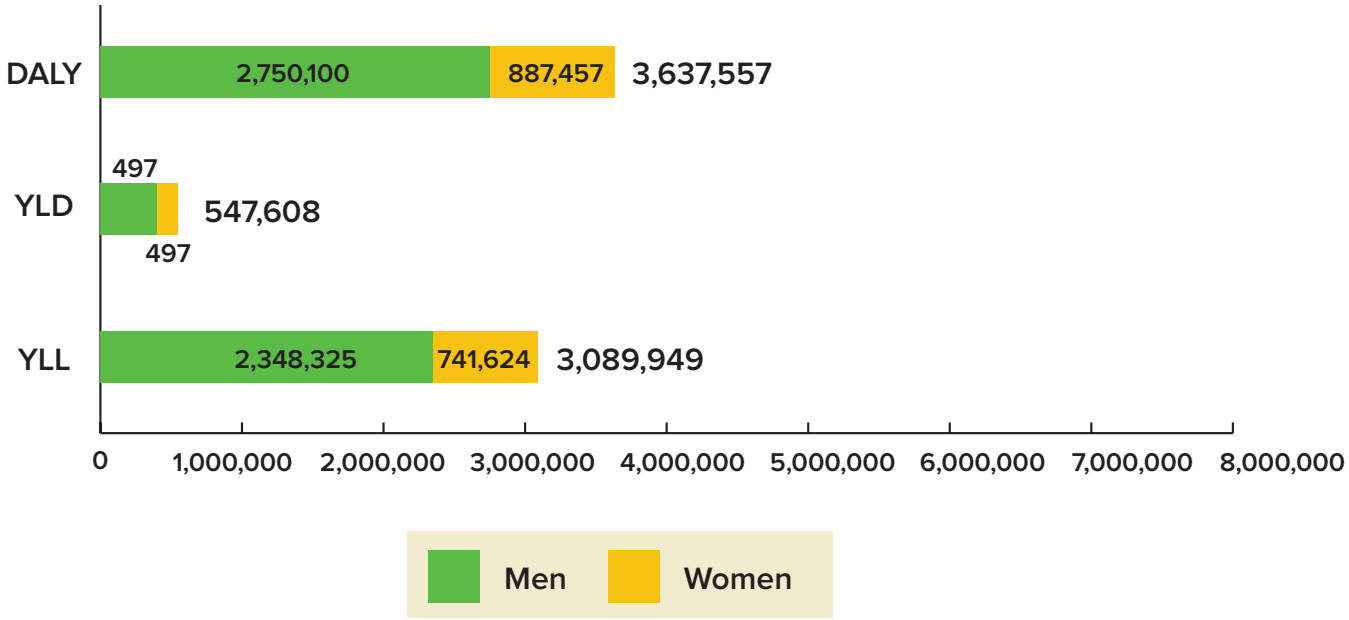

*Figures subject to rounding.

**Fig. 7: Tobacco-attributable deaths by disease in Pakistan, 2019**




*Source:* Results are from the IHME Global Burden of Disease Results Tool. Other causes include larynx cancer, esophageal cancer, asthma, other pharynx cancer, bladder cancer, subarachnoid hemorrhage, Alzheimer's disease and other dementias, breast cancer, stomach cancer, colon and rectum cancer, aortic aneurysm, leukemia, pancreatic cancer, nasopharynx cancer, liver cancer, prostate cancer, peptic ulcer disease cervical cancer kidney cancer, atrial fibrillation and flutter, peripheral artery disease, rheumatoid arthritis, multiple sclerosis, and gallbladder and biliary diseases.

**Fig. 8: Tobacco-attributable DALYs, YLDs, and YLLs* in Pakistan, by gender, 2019**




*A Disability-adjusted life year (DALY) is a universal metric that allows comparison between different populations and health conditions across time. DALYs equal the sum of years of life lost (YLLs) and years lived with disability (YLDs). One DALY equals one lost year of healthy life. Years of life lost (YLL) are years lost due to premature mortality. Years lived with disability (YLD) can also be described as years lived in less-than-ideal health. A YLD is calculated by taking the prevalence of the condition multiplied by the disability weight for that condition [91].

## 4.2 Implementing policy measures that reduce the burden of tobacco use

The WHO FCTC provides a framework for tobacco control measures to be implemented by Parties at national and international levels to reduce continually and substantially the prevalence of tobacco use and exposure to tobacco smoke. Through the full implementation of the tobacco control measures in the WHO FCTC, Pakistan can secure significant health and economic returns, and begin to reduce the PKR 480 billion in annual economic losses from tobacco use.

The next two subsections present the health and economic benefits that result from five key WHO FCTC policy actions: 1) to increase tobacco taxation to reduce the affordability of tobacco products; 2) to create smoke-free public places and workplaces to protect people from the harms of tobacco smoke; 3) to implement plain packaging of tobacco products; 4) to enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship (TAPS); and 5) to scale up of brief advice to quit for tobacco users in primary care clinics.

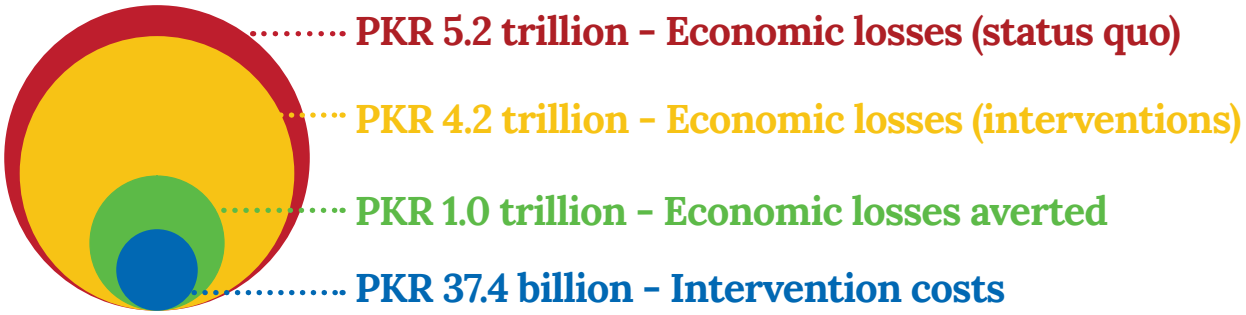
### *4.2.1 Health benefits—lives saved*

The full implementation of the WHO FCTC in Pakistan (inclusive of all five of the measures listed above) would lower the prevalence of tobacco use, leading to substantial health gains for the country. Implementing the package of five WHO FCTC policy actions that are the focus of this investment case would reduce the prevalence of cigarette smoking by 39 percent (in relative terms) over 15 years, saving 534,067 lives over 2023–2037, or about 35,604 lives annually.

### *4.2.2 Economic benefits—costs averted*

Implementing the package of five key WHO FCTC policy actions would result in would result in Pakistan avoiding 19 percent of the economic loss that it is expected to occur from tobacco use over the next 15 years. **Figure 9** illustrates the extent to which Pakistan can mitigate the economic losses it would incur under the status quo.

**Fig. 9: Tobacco-related economic losses over 15 years, 2023-2037**

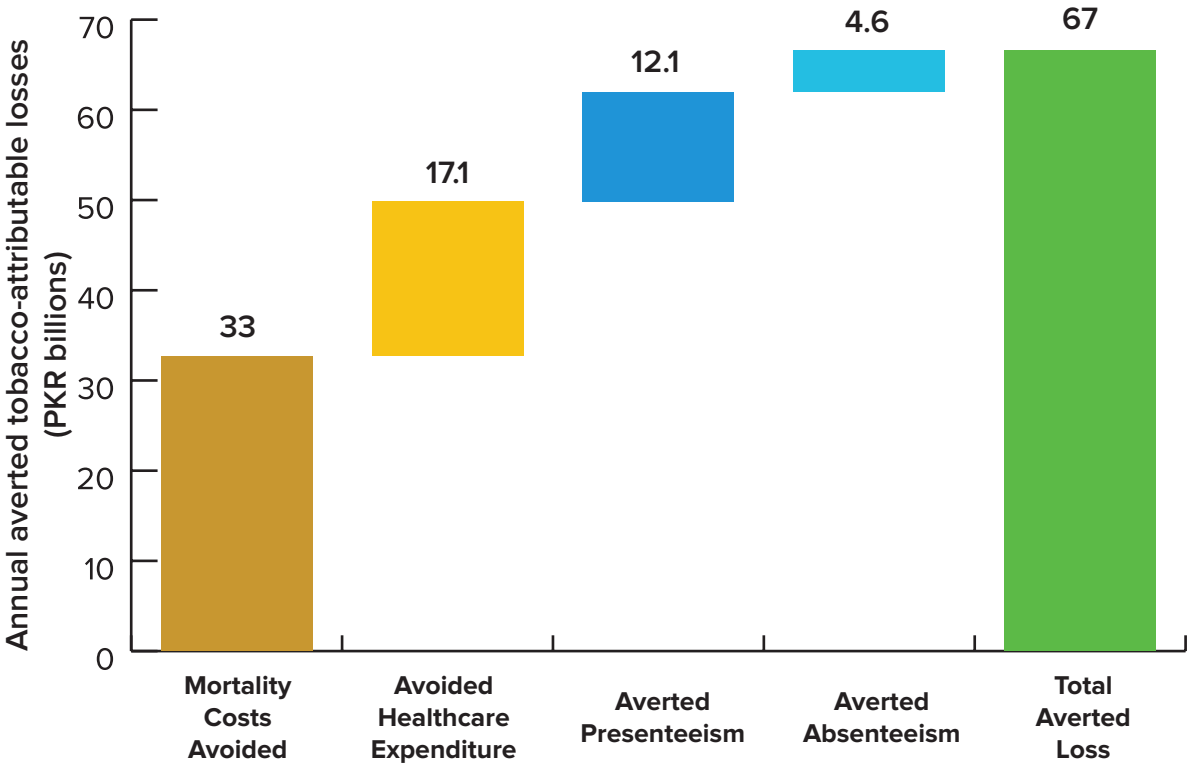



**In total, over 15 years Pakistan would save about PKR 1.0 trllion** that would otherwise be lost if the package of five key WHO FCTC policy actions is not implemented. This is equivalent to around PKR 66.6 billion in annual avoided losses.

With better health that would arise from the implementation of the WHO FCTC, fewer individuals would need health-care services due to tobacco-related diseases, resulting in direct cost savings to the government and citizens. Better health also leads to increased productivity. Fewer working-age individuals leave the workforce prematurely due to death. Workers miss fewer days of work (absenteeism) and are less hindered by health complications while at work (presenteeism).

**Figure 10** breaks down the sources from which annual avoided costs accrue from implementation of the package of five WHO FCTC policy actions. The largest annual avoided costs result from averted tobacco-attributable mortality (PKR 33 billion). The next highest source is avoided health-care expenditures (PKR 17.1 billion), averted presenteeism (PKR 12.1 billion), and reduced absenteeism (PKR 4.6 billion).

**Fig. 10: Sources of annual avoided economic costs as a result of implementing the tobacco control policy package in Pakistan***

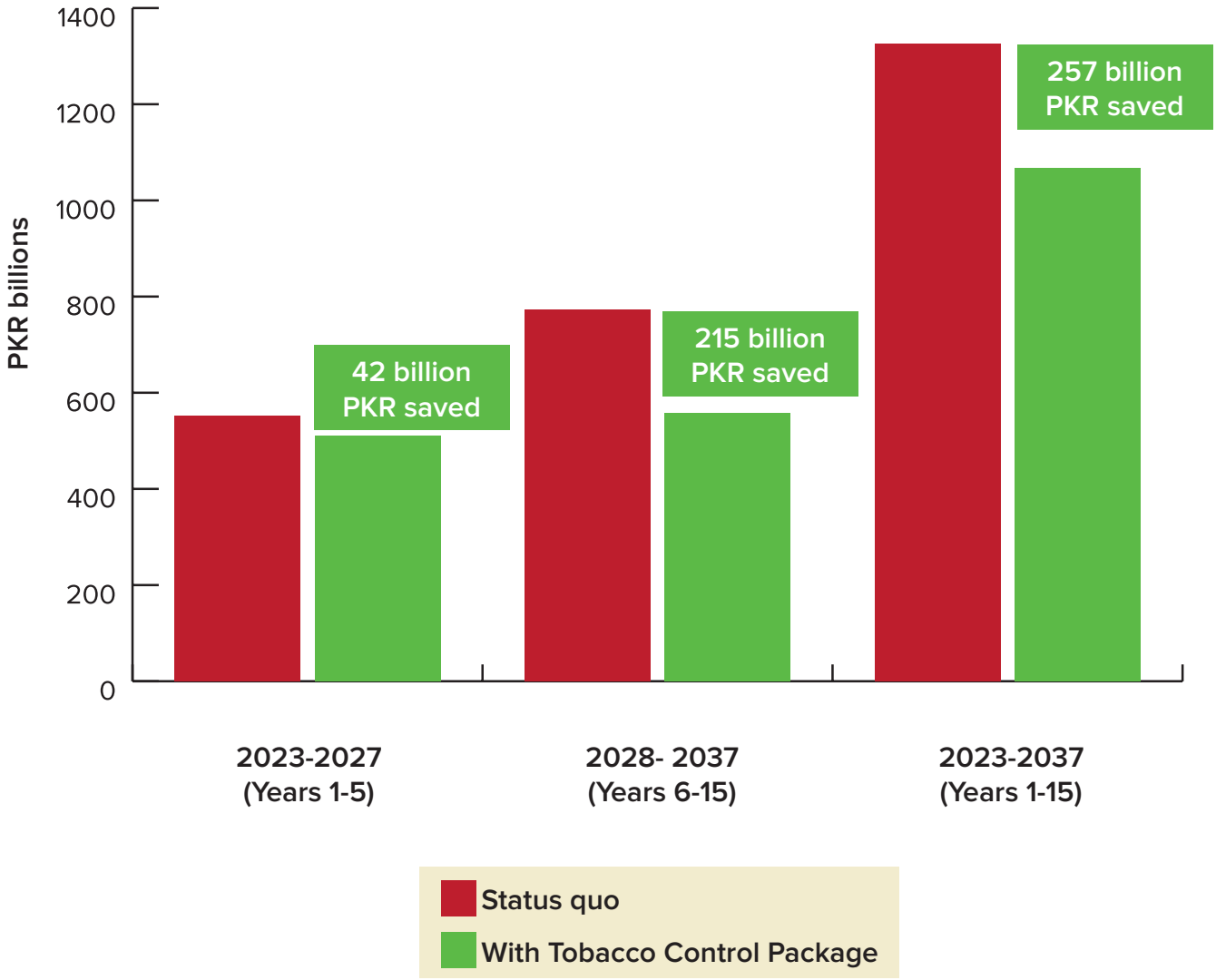



*Figures subject to rounding.

Implementing the package of five WHO FCTC policy actions examined in the investment case will reduce medical expenditure both for citizens and the government. Presently, total private and public health-care expenditures in Pakistan is about PKR 1.5 trillion annually [92], and 8.3 percent of this amount is directly related to treating disease and illness due to tobacco use [7] (≒ PKR 121.6 billion).

Year-on-year, the package of interventions would lower tobacco use prevalence, leading to less illness, and consequently less health-care expenditure (see **Figure 11**). Over the 15-year time horizon of the analysis, the package of interventions averts PKR 257 billion in health-care expenditures, or PKR 17.1 billion annually. Of these savings, 33 percent would go to the government and 54 percent would go to individual citizens who would have had to make OOP payments for health care. The remainder of savings would go to private insurance and other sources of health-care expenditures. From reduced health-care costs alone, the government would expect to save about PKR 85 billion over 15 years. Simultaneously, the government would successfully reduce the health expenditure burden that tobacco imposes on Pakistanis through OOP payments, supporting efforts to reduce economic hardship on families. For families with tobacco users who quit, spending that would have been on tobacco products or health care, could instead be invested in nutrition, education, and other productive inputs to secure a better future.

**Fig. 11: Private and public health-care costs (and savings) in Pakistan over the 15-year time horizon, 2023-2037**




### 4.2.3 The return on investment

While the health gains from strengthening tobacco control in Pakistan are by themselves enough to justify the cost of the interventions, the economic gains that will also accrue make the case for WHO FCTC implementation even stronger.

An investment is considered worthwhile from an economic perspective if the gains from making it outweigh the costs. A return on investment (ROI) analysis measures the efficiency of the tobacco investments by dividing the economic benefits that are gained from implementing the WHO FCTC tobacco control investments by the costs of the investments.

For this investment case, the ROI for each intervention was evaluated in the short-term (five years), to align with planning and political cycles, and in the medium-term (15 years) to align with the original timeframe allotted for the SDGs. The ROI was also evaluated for

the full package of five WHO FCTC policy actions. Total benefits (avoided economic losses due to tobacco-attributable mortality, health-care expenditures, and diminished workplace productivity) are a measure of which interventions are expected to have the largest impact. **Table 2** displays costs, benefits, and ROIs by intervention, as well as for all interventions combined. With the exception of training health professionals to provide brief advice to quit tobacco use (an individual-level intervention with higher initial personnel costs), interventions deliver an ROI greater than one within the first five years, meaning that even in the short-term the benefits of implementing the interventions outweigh the costs. Depending on the intervention, over the first five years, the government will gain economic benefits ranging from between 0.2 to 110 times its investment. Given the long-term nature of many tobacco-related illnesses, with disease often only developing after years of tobacco use, the ROIs for each intervention would continue to grow over time, reflecting the compounding gains from planning and development stages to full implementation.

**Table 2: Return on investment, by tobacco control policy/intervention, in Pakistan (PKR millions), 2023-2027 and 2023-2037**

| Return on investment, by tobacco control measure | First 5 years (2023-2027) | | | All 15 years (2023-2037) | | |
|---|---|---|---|---|---|---|
| | Total Costs (millions) | Total Benefits (millions) | ROI | Total Costs (millions) | Total Benefits (millions) | ROI |
| **Tobacco control package*** *(all policies/interventions implemented simultaneously)* | **15.0** | **162** | **11** | **37** | **999** | **27** |
| **Increase tobacco taxation (cigarette taxation modeled)**[18] *(WHO FCTC Art. 6)* | 0.7 | 73 | 110 | 1.6 | 482 | 311 |
| **Create smokefree public and work places** *(WHO FCTC Art. 8)* | 3.3 | 9.6 | 3 | 6.9 | 68 | 10 |
| **Implement plain packaging** (*WHO FCTC Guidelines for implementation of Articles 11 and 13)* | 1.4 | 19.2 | 13 | 3.2 | 135 | 42 |
| **Enact and enforce a comprehensive TAPS bans** *(WHO FCTC Art. 13)* | 1.4 | 70 | 50 | 3.3 | 479 | 147 |
| **Scale up of brief advice to quit for tobacco users in primary care clinics** *(WHO FCTC Art. 14)* | 6.0 | 1.0 | 0.2 | 17.4 | 19.9 | 1 |

* The combined impact of all interventions is not the sum of individual interventions. To assess the combined impact of interventions, following Levy and colleagues' (2018), "effect sizes [are applied] as constant relative reductions; that is, for policy i and j with effect sizes PRi and PRj, (1-PR ii) x (1-PR j) [is] applied to the current smoking prevalence [93]. The costs of the tobacco package include the costs of the examined policies, as well as programmatic costs to implement and oversee a comprehensive tobacco-control programme.

18 Raise taxes to what is considered in the WHO Report on the Global Tobacco Epidemic, 2021 as a high-level, which is for total taxes to represent at least 75 percent of the retail price. In the scenario modeled, cigarette taxes would meet the 75 percent level by 2033

Over the 15-year period, increasing tobacco taxes on cigarettes is expected to have the highest return on investment (311:1).[19] The return will be even higher with increasing tax on all tobacco products. Enacting and enforcing bans on tobacco advertising, promotion, and sponsorship (TAPS) is expected to have the next highest return on investment (147:1), followed by implementing plain packaging of tobacco products (42:1), creating smoke-free public places and workplaces to protect people from the harms of tobacco smoke (10:1), and finally to scale up of brief advice to quit for tobacco users in primary care clinics (1:1).

*Photo: © World Bank*

19 Rounded to the nearest whole number

# 5. Examining additional impacts: government revenue, equity and the SDGs

The investment case examines how increasing taxes would impact government revenue and equity, and the contributions that stronger WHO FCTC implementation would make towards Pakistan's fulfillment of SDG Target 3.4.

## 5.1 Tax analysis: the impact of increasing cigarette taxes on government revenue

*The Addis Ababa Action Agenda on Financing for Development* [94], aligned with the adoption of the Sustainable Development Goals, noted that tobacco price and tax measures "represent a revenue stream for financing for development".

This section analyzes a scenario in which Pakistan chooses to increase tobacco taxes towards levels considered in the WHO Report on the Global Tobacco Epidemic, 2021 as a high-level of achievement. The modelling in the investment case only considers a tax on cigarettes and uses a hypothetical scenario in which Pakistan's current tax structure and rates stay the same, with the exception that in real terms, the specific excise tax is increased from current rates (PKR 33 per pack) to PKR 48 in 2027.[20]

Evidence from Pakistan shows that a 10 percent increase in price is expected to result in a 8.5 percent reduction in consumption [95].[21] Accounting for the rise in demand that results from income increases,[22] under the described tax increase pattern and demand elasticities, licit cigarette consumption would drop from the present amount of about 2.3 billion packs annually[23] to about 2.0 billion in 2026.

20 The 2023 tax increase on cigarettes established in the Finance (Supplementary) Act, 2023 was enacted after the modelling was done. Therefore, the baseline tax scenario used in the modelling was from the WHO Report on the Global Tobacco Epidemic, 2021 with total taxes representing 61 percent of the retail price of the most sold brand of cigarettes [53].

21 Nayab et al (2020) [95] report rural (-1.159) and urban (-0.710) price elasticities. Using data on the prevalence of smoking among rural and urban Pakistanis, and rural and urban population data from the World Bank, analysts calculated a weighted overall elasticity of 0.85.

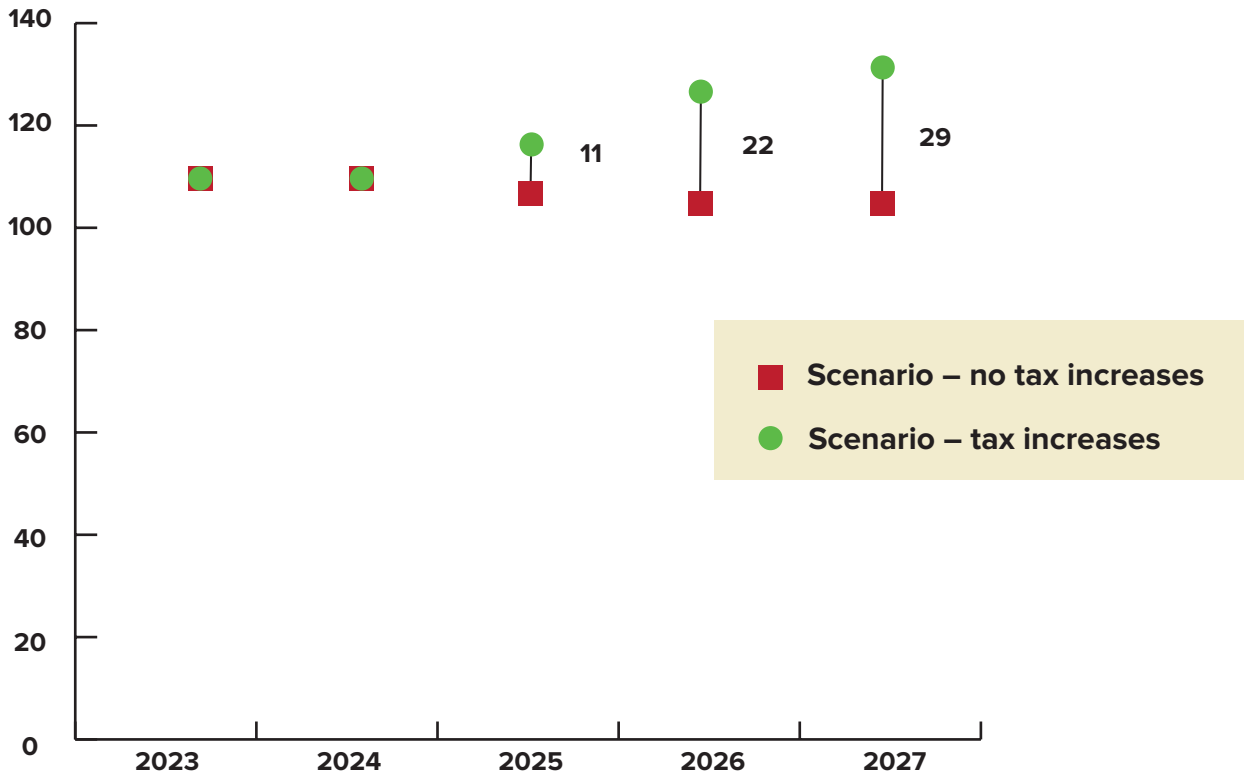
22 Income elasticity of demand – 0.319 [96]; income prevalence elasticity of demand – 0.16. Projected income growth over the period from 2022 to 2026 is estimated using real GDP growth projections from the International Monetary Fund as a proxy for income – 7.4 percent [97].

23 The number of licit cigarette packs sold (2.3 billion) is estimated by dividing revenue estimates from the Pakistan Revenue Division Year Book 2020-2021 [90] by a weighted average of the specific excise tax rates for low and high tier cigarettes from The World Bank's Overview of Tobacco Use in Pakistan report [43].

Even though there are drops in consumption, revenue gains will still occur. Although reducing the affordability of tobacco products leads people to quit smoking or reduce consumption, many people will continue to smoke, largely because of the addictive nature of tobacco, paying higher taxes to the government each time they purchase cigarettes.

Over a five-year period, **Figure 12** compares annual government cigarette tax revenue (undiscounted) in a hypothetical scenario where Pakistan enacts strong specific excise taxes to a scenario in which tobacco prices remain static over time. The figure depicts a growing gap in annual tax collection between the two scenarios. It is assumed that no change occurs during the first two years, allowing time for debate and legislation of the new tax increase. In 2025, specific excise tax increases in an "intervention scenario" yield an additional 11 billion in revenue, growing to 29 billion in 2027. Figure 13 demonstrates that under the hypothetical scenario with tax increases (in blue), government revenues will substantially grow even as many tobacco users quit because of the increased cost.

**Fig. 12: Additional annual tax revenue (undiscounted) in comparison to the baseline scenario, in Pakistan 2023–2027**




This tobacco tax revenue analysis was done before the cigarette tax increase enacted in the Finance (Supplementary) Act, 2023.

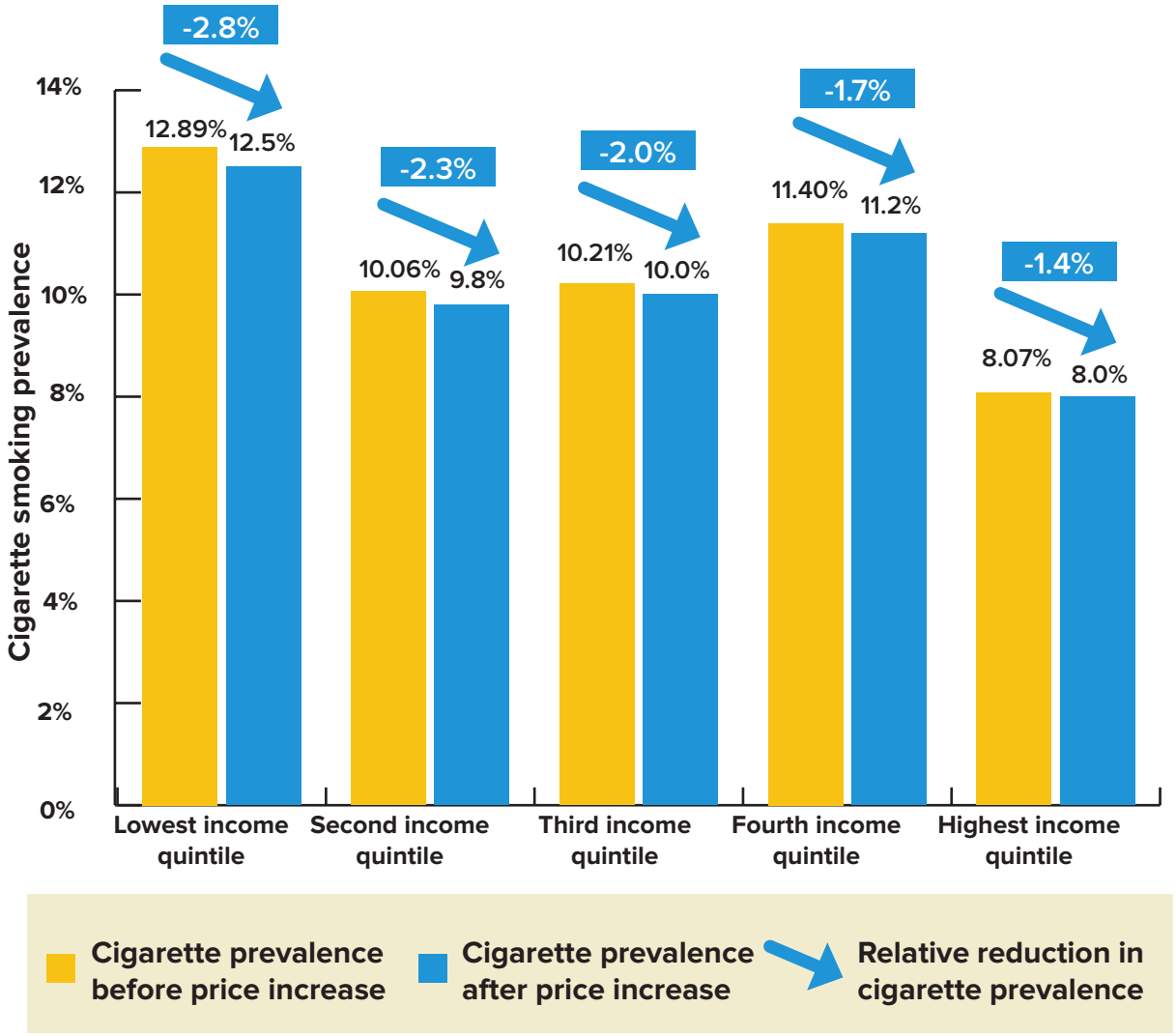
## 5.2 Equity analysis: benefits for lower-income populations of increasing cigarette taxes

A common misconception is that taxes on tobacco products may disproportionately harm poor tobacco users, since the tax burden represents a higher proportion of their income than that of wealthier tobacco users. However, evidence shows that the poor actually stand to benefit most from raised cigarette taxes [98]. Relative to richer smokers, lower-income smokers are more likely to quit smoking when taxes are increased [33], meaning they benefit from subsequent decreases in tobacco-related health problems, and resulting medical costs which can be financially catastrophic. In Lebanon [99], for example, a 50 percent increase in cigarette prices was projected to prevent 23,000 new cases of poverty over 50 years, and that same level of increase was found to avert catastrophic health expenditures for 1.83 million individuals in India, 440,000 in Bangladesh, and 350,000 in Viet Nam [100].

To examine the extent to which a cigarette tax increase could be considered pro-poor in Pakistan, an equity analysis has been undertaken as part of the investment case. The analysis divides Pakistan's population into five equal groups, by income, where quintile 1 is composed of the poorest 20 percent of people, and quintile 5 is composed of the wealthiest 20 percent. Within each income group, the analysis examines the impact of a hypothetical tax increase that raises the price of the average pack of cigarettes by about 10 percent (PKR 7.5, or about USD 0.04). This represents only the first year of tax increases that are modeled in the investment case. People at different income levels tend to respond differently to price changes. Average tobacco-income prevalence elasticities of demand from a set of low- and middle-income countries are employed to assess how different economic groups react to changes in price.

In Pakistan, the poorest income quintile has the highest smoking prevalence (12.9 percent), meaning they experience the largest share of health and economic impacts resulting from tobacco use. The results from the analysis show that all income quintiles reduce smoking in response to the tax measures, but because people with lower incomes are more responsive to changes in price, the cigarette tax increase causes the largest drop in prevalence among the poorest income quintiles. **Figure 13** shows the smoking prevalence in each income quintile before and after the tax increase, as well as the relative change in smoking prevalence.

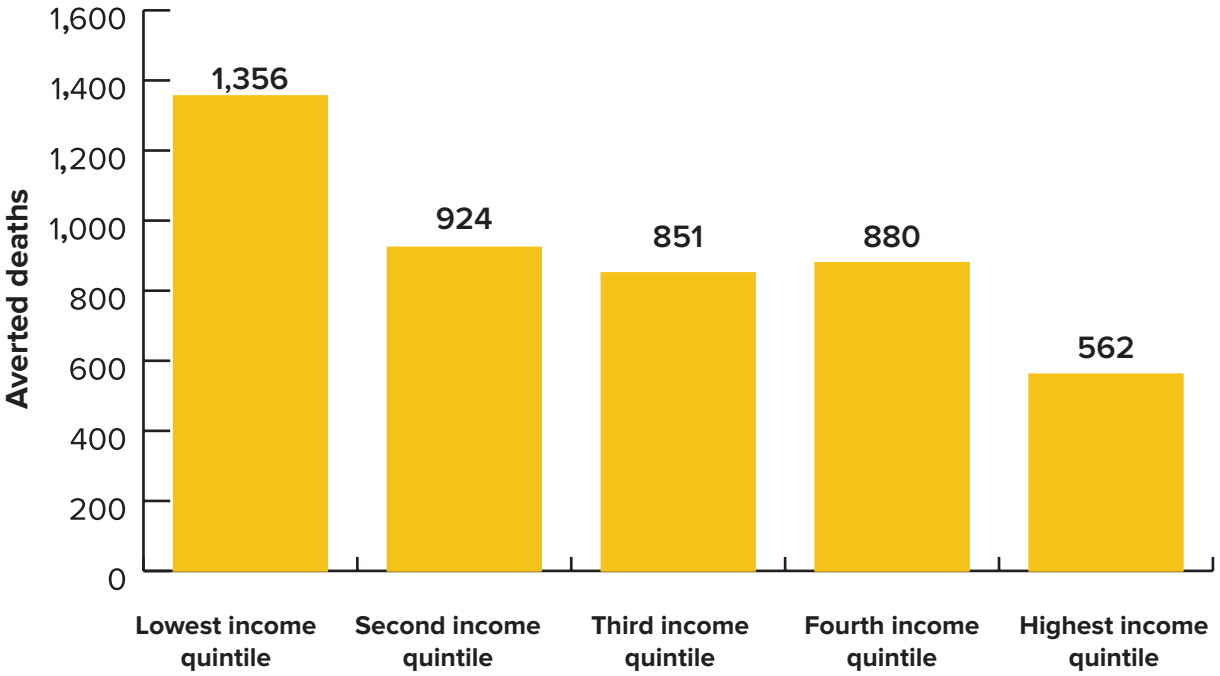
**Fig. 13: Relative reduction in cigarette smoking prevalence before and after the cigarette tax increase, by income quintile, during the first year of tax increases that are modeled (2025)***




*Percentages are rounded to the second decimal place.*

Lower rates of smoking translate to health gains. Prior to the cigarette tax increase, of the 134,000 smoking-attributable deaths observed in 2019, a quarter (24.5 percent) occurred among the poorest 20 percent of the population (quintile 1). As the cigarette tax increases cause cigarette smoking prevalence to fall the most in the poorest quintile, health benefits disproportionately accrue to lower-income Pakistanis. The equity analysis finds that 29.7 percent of the deaths that would be averted during the first year of tax increases modeled in the investment case would be among the poorest 20 percent of the population, as shown in **Figure 14**.

**Fig. 14: Deaths averted in Pakistan by tax increase, by income quintile during the first year of tax increases that are modelled (2025)**




*Percentages are rounded to the second decimal place.

## 5.3 The Sustainable Development Goals and the WHO FCTC

Implementing the package of five WHO FCTC policy actions will support Pakistan in fulfilling SDG Target 3.a to strengthen implementation of the WHO FCTC. Moreover, acting now will contribute to Pakistan's efforts to meet SDG Target 3.4 to reduce by one-third premature mortality from NCDs by 2030: the measures would contribute the equivalent of about 11 percent of the needed reduction in mortality for Pakistan to achieve SDG Target 3.4.

The WHO FCTC is an accelerator for sustainable development, and its implementation will benefit the achievement of many SDGs, including those outside of the health and well-being domain [21]. For example, stronger tobacco control will contribute to the reduction of poverty and inequalities (SDGs 1 and 10, respectively) and economic growth (SDG 8).


SDG Target 3.4

**By 2030 the WHO FCTC measures would** contribute the equivalent of around 11 percent of the needed reduction in mortality for Pakistan to achieve SDG Target 3.4.

## Recommendations

1. **Commit to fully implement the WHO FCTC in Pakistan**

2. **Strengthen tobacco tax structures and increase tax rates (WHO FCTC *Article* 6)**

3. **Implement and enforce the other four tobacco control policies studied in this investment case:**

   - **comprehensive policies to make all public and work places smokefree (WHO FCTC *Article* 8);**
   - **plain packaging of tobacco products (WHO FCTC *Guidelines for implementation of Article* 11 *and* WHO FCTC *Guidelines for implementation of Article* 13);**
   - **strengthened tobacco advertising, promotion and sponsorship (TAPS) bans that close loopholes (WHO FCTC *Article* 13); and**
   - **scale up of brief advice to quit for tobacco users in primary care clinics ( (WHO FCTC *Article* 14).**

4. **Strengthen multisectoral coordination for tobacco control in Pakistan and encourage the participation of civil society in WHO FCTC implementation (WHO FCTC *Articles* 5.2*(a) and* 4.7)**

5. **Develop a national tobacco control strategy (WHO FCTC *Article* 5.1)**

6. **Implement measures to protect public health policies from the commercial and other vested interests of the tobacco industry (WHO FCTC *Article* 5.3)**

7. **Fully implement the Protocol to Eliminate Illicit Trade in Tobacco Products, including by building capacity to combat illicit trade (WHO FCTC *Article* 15 *and Protocol to Eliminate Illicit Trade in Tobacco Products*)**

8. **Support health-promoting and economically viable alternatives to tobacco farming (WHO FCTC *Article* 17 *and* 18)**

9. **Identify opportunities to link the implementation of the WHO FCTC with wider sustainable development strategies**

# 6. Conclusion and recommendations

Each year, tobacco use costs Pakistan PKR 480.3 billion in economic losses and causes substantial human development losses. Fortunately, as the investment case shows, there is an opportunity to reduce the health, social and economic burden of tobacco in Pakistan. Enacting the five key WHO FCTC policy actions would save 35,600 lives each year and reduce the incidence of disease, leading to savings from averted medical costs and averting productivity losses.

In economic terms, these benefits are substantial, adding up to PKR 1 trillion over the next 15 years. Importantly, the economic benefits of strengthening tobacco control in Pakistan greatly outweigh costs of implementation (PKR 1 trillion in benefits versus just PKR 37 billion in costs). By investing now in the package of five WHO FCTC policy actions modeled in this investment case, Pakistan would not only reduce tobacco consumption, improve health, reduce government health expenditures, and grow the economy, it would also reduce hardships faced by many Pakistani people. The country can also reinvest savings from government health-care expenditures and revenue from increased tobacco taxes into national development priorities such as universal health coverage and other social protection measures, as well as COVID-19 response and recovery efforts.

Based on the findings of this investment case, these key actions for Pakistan are recommended to be pursued simultaneously:

1

## Commit to fully implement the WHO FCTC in Pakistan

As a Party to the WHO FCTC, Pakistan has undertaken to fully implement the Convention. The WHO FCTC is an evidence-based treaty that sets out a clear blueprint for action to protect present and future generations from the devastating health, social, environmental, and economic consequences of tobacco consumption and exposure to tobacco smoke. Pakistan is encouraged to commit to fully implementing the treaty, with a focus on the recommendations made for Parties in the Global Strategy to *Accelerate Tobacco Control: Advancing Sustainable Development through the Implementation of the WHO FCTC 2019–2025*, in relevant WHO implementation guidelines, in WHO FCTC Needs Assessment reports and in this investment case.

## 2 Given the effectiveness of tobacco taxation, strengthen tobacco tax structures and increase tax rates (WHO FCTC *Article 6*)

Pakistan is encouraged to continue to strengthen its tobacco taxation structure in accordance with recommendations made in the *WHO FCTC implementation guidelines for Article 6* [61] and by WHO in the *WHO Technical Manual on Tobacco Tax Policy and Administration* [60]. It is also encouraged to substantially raise the total tax share of the retail price of tobacco to meet or exceed 75 percent of the retail price (considered in the *WHO Report on the Global Tobacco Epidemic, 2021* as a high-level of achievement) [53]. Tobacco taxes should also aim to reduce affordability, including by increasing at a rate that outpaces inflation and income growth [101].

It is also recommended to ensure robust tobacco taxation policies are in place for all types of tobacco (including for shisha, smokeless tobacco and novel tobacco products), and that consideration is given to removing duty-free allowances for tobacco. Pakistan should consider giving particular attention to smokeless tobacco as it is commonly consumed in the country, but currently unregulated and untaxed. It is important for taxation to be applied evenly across the range of tobacco products available to prevent substitution of products.

There is also opportunity for Pakistan to simplify the current tax system by moving away from a complex two-tier tax system towards a uniform specific excise tax rate for all cigarette brands. This would simultaneously decrease administrative costs and efforts while also providing less incentive for tobacco companies to alter prices and increase the total tax rate [54]. Also, a uniform specific tax or a mixed tax structure that relies on specific excise taxes are easier to administer and are more likely to increase cigarette prices, increase the average excise level and lead to less variability in prices of taxed products compared to a tiered system [60]. In addition, a uniform tax structure may reduce the incentive for consumers to simply switch to a cheaper brand, supporting cessation measures.

Pakistan should also consider a minimum specific tax floor as recommended in the *WHO FCTC Guidelines for implementation of Article 6* [61].

There is clear evidence that raising cigarette prices through increased taxes is a highly effective measure for reducing smoking among youth, young adults, and people from lower socioeconomic communities. Increasing the price of tobacco will have benefit for these vulnerable populations.

## 3 Take immediate action to strengthen, implement and enforce the other four key WHO FCTC policy actions modeled in this investment case

- Create smoke-free public places and workplaces to protect people from the harms of tobacco smoke by making all public indoor places fully smoke-free and strengthening enforcement *(WHO FCTC Article 8)*.
- Consider implementation of plain packaging to reduce the appeal of tobacco packaging and to make health warnings more prominent *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)*.
- Further strengthen its TAPS bans by closing policy loopholes in areas like allowing tobacco brand names on non-tobacco products and vice versa, and permitting certain forms of tobacco sponsorship including financial support. Furthermore, it is important Pakistan ensures robust enforcement *(WHO FCTC Article 13)*.
- Scale up of brief advice to quit for tobacco users in primary care clinics. Further gains would be possible with the provision of additional support to tobacco users, such as offering specialized tobacco dependence treatment services, a national toll-free quit line and/or internet based quit support and making pharmacotherapies more widely available (free of cost if possible) *(WHO FCTC Article 14)*.

## 4 Develop a national tobacco control strategy for Pakistan (WHO FCTC *Article* 5.1)

It is recommended that Pakistan develops, publishes and routinely updates a national multisectoral tobacco control strategy for Pakistan. This will, among other things, serve to guide the work of the TCC as well as set out plans for tobacco control policies and legislation. The national tobacco control strategy for Pakistan should include action that would:

- Outline a comprehensive workplan and timeline for full implementation of the WHO FCTC.
- Identify sustainable funding necessary for tobacco control.
- Strengthen capacity for compliance building and enforcement of tobacco control laws.
- Prevent children and young people from taking up tobacco use.
- Encourage and support current tobacco users to quit.
- Protect public health policies from commercial and other vested interests of the tobacco industry.

- Ensure gender-sensitive approaches to policy, programmes, and services.
- Prioritize vulnerable groups including, but not limited to, women and girls, those with low-income and youth.
- Undertake research, surveillance, exchange of information and international cooperation to support WHO FCTC implementation.

## 5 Strengthen multisectoral coordination for tobacco control in Pakistan and encourage the participation of civil society in WHO FCTC implementation (WHO FCTC *Articles* 5.2(*a*) *and* 4.7)

Strengthening Pakistan's Tobacco Control Cell (TCC) is an important step in supporting the full implementation of the WHO FCTC and policy coherence on tobacco control. Action to strengthen the TCC can be guided by the joint Convention Secretariat-UNDP publication, *National Coordinating Mechanism for Tobacco Control: Toolkit for Parties* to Implement *Article 5.2(a) of the WHO FCTC* [102]. As the TCC was established in 2007, it is important that the TCC remains functional and active. Additionally important is that the TCC is formalized and designated as the official NCM for tobacco control in Pakistan and it is multisectoral in nature including members from all sectors who have a role in tobacco control.

The work of TCC will be enhanced by including the media and civil society groups as appropriate, to support advocacy, compliance building and encouraging positive public opinion for tobacco control measures. In addition, tobacco control, including the activities of the TCC, needs to be sustainably resourced into the future.

## 6 Implement measures to protect public health policies from the commercial and other vested interests of the tobacco industry (WHO FCTC *Article* 5.3)

It is recommended that Pakistan take action to protect the country's public health policies from the commercial and other vested interests of the tobacco industry. A resolution made by the World Health Assembly in 2001, citing the findings of the Committee of Experts on Tobacco Industry Documents, states that "the tobacco industry has operated for years with the express intention of subverting the role of governments and of WHO in implementing public health policies to combat the tobacco epidemic" [103].

The Preamble of the WHO FCTC recognizes that Parties "need to be alert to any efforts by the tobacco industry to undermine or subvert tobacco control efforts and the need to be informed of activities of the tobacco industry that have a negative impact on tobacco control efforts". The WHO FCTC includes a specific obligation that "in setting and implementing their public health policies with respect to tobacco control, Parties shall act to protect these policies from commercial and other vested interests of the tobacco industry in accordance with national law". The *2021 Global Progress Report On Implementation of the WHO Framework Convention On Tobacco Control* reported that the most frequently mentioned barrier to the implementation of the Convention by Parties is the interference by the tobacco industry, including the industries producing novel and emerging tobacco products and nicotine products [104].

Pakistan is encouraged to review current policies and legislation in light of the Implementation Guidelines for WHO FCTC Article 5.3 [105], and then address outstanding gaps by implementing the recommendations made in those guidelines. Attention should also be given to ensuring policy coherence across government policy-making to prioritise public health and WHO FCTC implementation.

Efforts to raise awareness among public officials of the need to avoid conflicts of interest are also encouraged and can be undertaken in collaboration with tobacco control civil society groups in Pakistan.

## 7 Fully implement the Protocol to Eliminate Illicit Trade in Tobacco Products, including by building capacity to combat illicit trade (*Protocol and WHO FCTC Article 15*)

It is recommended that Pakistan moves forward with the full implementation of the Protocol to Eliminate Illicit Trade in Tobacco Products. Pakistan has taken an important step by joining the Protocol, however illicit trade remains a main barrier to successful tobacco control in Pakistan.

To move forward in combatting illicit trade, Pakistan can ensure the IREN of the FBR has sufficient resources and is prepared to address illicit trade of tobacco products. Pakistan should also consider requiring tax stamps, which would be useful to monitor payments of taxes [25]. The Government of Pakistan could also collect more reliable data and increase research on illicit trade to contribute to future policy-making.

## 8 Support health-promoting and economically viable alternatives to tobacco farming (WHO FCTC *Articles 17 and 18*)

It is strongly recommended for Pakistan to shift away from tobacco farming and promote healthy and sustainable economically viable alternatives, for example by shifting agriculture production towards health-promoting crops [106], in line with Articles 17 and 18 of the WHO FCTC.

## 9 Identify opportunities to link the implementation of the WHO FCTC with wider sustainable development strategies in Pakistan

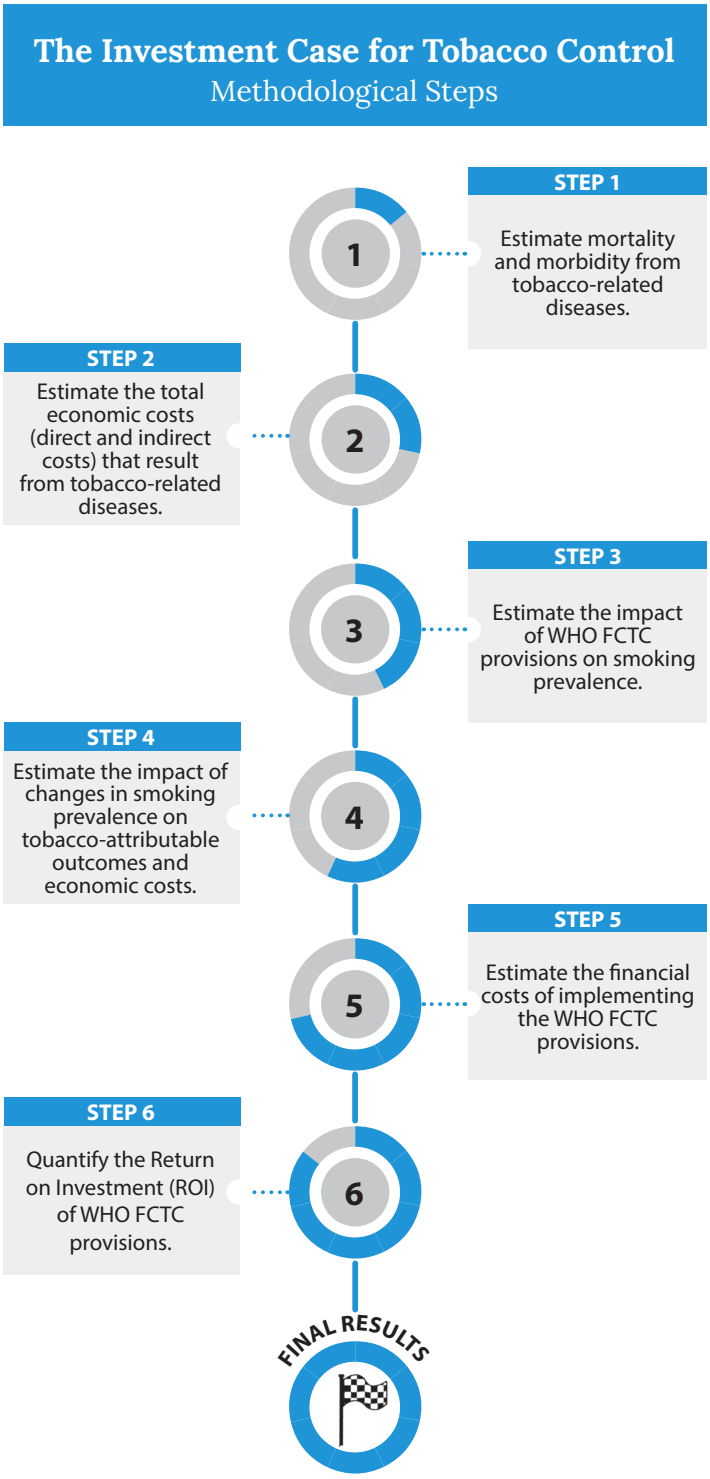
With the vast health, economic, social and environment costs of tobacco, the case is clear: implementing the WHO FCTC is a powerful means for Pakistan to improve the lives of citizens, achieve the SDGs, and better the conditions and future of the country. All sectors have a role to play in tackling tobacco use, and the benefits of full WHO FCTC implementation will enrich all aspects of life in Pakistan. The Government of Pakistan should prioritize the implementation of the WHO FCTC in future sustainable development strategies, as it is currently not included in its Implementation of the *2030 Agenda for Sustainable Development* (2019)[51] nor Pakistan's *12th Five Year Plan 2018-2023* [52].

# Methodology annex

## A1.1 Overview

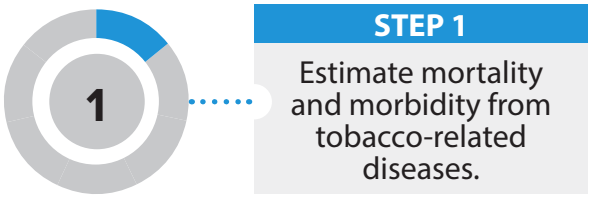
The economic analysis consists of two components: 1) assessing the current burden of tobacco use and 2) examining the extent to which WHO FCTC provisions can reduce the burden. The first two methodological steps depicted in **Figure A1** are employed to assess the current burden of tobacco use, while methodological steps 3-6 assess the impact, costs, and benefits of implementing or intensifying WHO FCTC provisions to reduce the demand for tobacco. The tools and methods used to perform these methodological steps are described in detail below.

**Fig. A1: Steps in the Investment Case**

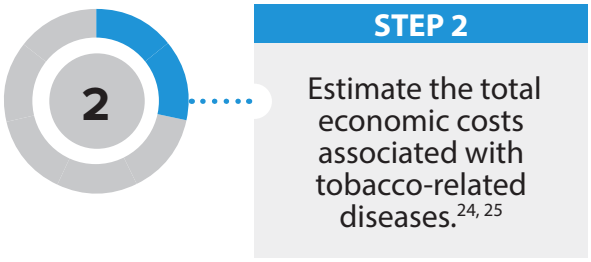


## A1.2 Component one: current burden

The current burden model component provides a snapshot of the health and economic burden of tobacco use in Pakistan in the most recent year for which data are available.




The investment case model is populated with country-specific data on tobacco-attributable mortality and morbidity from the 2019 Global Burden of Disease Study (GBD) [6], [107]. The study estimates the extent to which smoking and secondhand tobacco smoke exposure contribute to the incidence of 37 diseases, healthy life years lost, and deaths, across 195 countries.




Next, the model estimates the total economic costs of disease and death caused by tobacco use. The total economic costs include tobacco-attributable healthcare expenditures, the value of tobacco-attributable mortality, and workplace productivity losses: absenteeism and presenteeism.

**Healthcare expenditures** – Health-care expenditures include smoking-attributable public (government-paid), private (insurance, individual out-of-pocket), and other health-care expenditures. The proportion of health-care costs attributable to smoking was obtained using the formula for estimating smoking attributable fraction (SAF) of health-care expenditures from Goodchild et al. (2018) [7]. The SAF for Pakistan is estimated at 8.3 percent. To calculate the share of smoking-attributable health-care expenditures borne by public, non-profit, and private entities, it was assumed that each entity incurred smoking-attributable health-care

24 In assessing the current burden of tobacco use, the economic costs of mortality include the cost of deaths due to any form of exposure to tobacco (including smoking, secondhand smoke exposure, and the use of other types of tobacco products). Only smoking-attributable (not tobacco-attributable) costs are calculated for healthcare expenditures, absenteeism and presenteeism. While other forms of tobacco may also cause losses in these categories, no data is available to precisely ascertain those losses.

25 All diseases are assumed to decrease in proportion to smoking prevalence when the decrease in prevalence occurs. While the model overestimates how quickly health benefits will accrue for some diseases, for example cancers—recent evidence suggests notable declines in the risk of lung cancer incidence begin two to five years after smoking prevalence decreases [108]. On the other hand, the risk of incidence of other diseases, for example CVD, declines significantly in the years immediately following quitting [109].

costs in equal proportion to the entity's contribution to total health expenditure. Health-care expenditures were obtained from the *WHO Global Health-care Expenditure Database* (GHED) [92]. The latest year for which data are available in WHO GHED is 2019. To obtain 2020 values, we took the average annual increase in health-care expenditures in Pakistan over the past 10 years and applied that increase to the 2019 health-care expenditure values.

**Workplace costs and the cost of tobacco-attributable mortality** – Workplace costs and the cost of tobacco-attributable mortality represent the monetized value of lost time, productive capacity, or quality of life as a result of tobacco-attributable diseases. The cost of tobacco-attributable mortality accrues when tobacco use causes mortality, eliminating the unique economic and social contributions that an individual would have provided in their remaining years of life. Workplace costs accrue when tobacco use results in productivity losses. Compared to non-tobacco users, individuals who use tobacco are more likely to miss days of work (absenteeism) and to be less productive at work due tobacco-related illnesses (presenteeism).

- *The economic cost of tobacco-attributable mortality*. Tobacco-attributable mortality was monetized using a "value of a statistical life year" (VSLY) measure. VSL is a measure of individuals' willingness to pay for small changes in the risk of death and it is commonly used in economic evaluations of health programmes and policies to monetize health outcomes [110]. Few studies have assessed VSL in low- and middle-income countries [111]. We extrapolated a country-specific estimate of VSL following guidance from the *Reference Case Guidelines for Benefit-cost analysis in Global Health and Development* [110], estimating the value of one additional year of life for Pakistan at PKR 147,112 (value of a statistical life year (VSLY)). Using GBD data on the age at which tobacco-attributable deaths occur, the model calculates the total number of years of life lost due to tobacco, across the population. Each future year of life is multiplied by VSLY to calculate the cost of tobacco-attributable mortality.

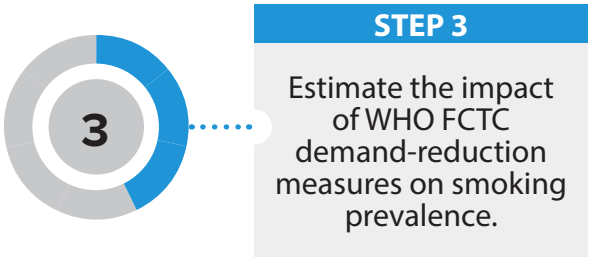
- *Productivity costs.* Productivity costs consist of costs due to absenteeism and presenteeism and are counted only among employed cigarette smokers. The model uses estimates from academic literature on the number of extra working days missed due to active smoking (2.9 days per year) [112]. Presenteeism losses are obtained similarly, under research that shows that smokers in China, the United States, and five European countries experience about 22 percent more impairment at work because of health problems compared to never-smokers — losses equivalent to about 7.5 days of work [113]. The number of employed smokers is multiplied by days of work missed due to absenteeism or presenteeism by the average daily country wage to obtain estimates of losses.

## A1.3 Component two: policy/intervention scenarios

This component estimates the effects of WHO FCTC measures on mortality and morbidity, as well as on total economic costs (direct and indirect) associated with tobacco use.

A static model using a population attributable fraction (PAF) approach was used to estimate the total impact of the tobacco control measures. In the model, aside from smoking prevalence, variables do not change throughout the 15-year time horizon. The model follows a population that does not vary in size or makeup (age/gender) over time in two scenarios: a status quo scenario in which smoking prevalence remains at present day rates, and an intervention scenario in which smoking prevalence is reduced according to the impact of tobacco control measures that are implemented or intensified. Published studies have used similarly static models to estimate the impact of tobacco control measures on mortality and other outcomes [114], [115].

Within the investment case, mortality and morbidity, as well as economic costs that are computed in the intervention scenario are compared to the status quo scenario to calculate the extent to which tobacco control measures can reduce health and economic costs.




Selection of key WHO FCTC measures modeled within the investment case align with the *Global Strategy to Accelerate Tobacco Control* [116] developed following a decision at the Seventh session of the Conference of the Parties (COP7) to the WHO FCTC. Under Objective 1.1 of the Strategy, priority is given to enabling action to accelerate WHO FCTC implementation, including effective forms of technical and financial assistance to support Parties in the identified priority action areas. This includes Parties giving priority to, inter alia, the implementation of price and tax measures (WHO FCTC Article 6) and time-bound measures of the Convention. The time-bound measures, are for creating smokefree public and work places (WHO FCTC Article 8), prominent health warnings on tobacco packaging (WHO FCTC Article 11) and comprehensive bans on tobacco advertising, promotion, and sponsorship (WHO FCTC Article 13).

In addition, given the importance of awareness in behaviour change and shaping cultural norms, the investment cases include promoting and strengthening public awareness of tobacco control issues, including the health risks of tobacco use and tobacco smoke, addiction, and the benefits of cessation (WHO FCTC Article 12). Effect sizes for the WHO

FCTC demand reduction measures are obtained from the literature. The impact of enforcing smoke-free air laws, implementing plain packaging and intensifying advertising bans, are derived from Levy et al. (2018) [93] and Chipty (2016) [117], as adapted within the Tobacco Use Brief of Appendix 3 of the *WHO Global Action Plan for the Prevention and Control of Non-communicable Diseases 2013-2020* [118], and adjusted based on assessments of Pakistan's baseline rates of implementation. The impact of basic evidence-based tobacco cessation in the form of brief advice to quit offered to tobacco users by health-care professions in primary care settings is from Levy et al. 2010 [119].

Except for taxes—the impact of which is dependent on the timing of increases in tax rates (see below)— and the brief advice intervention—the impact of which is guided by rates of training for primary health-care providers (see also below)—the full impact of the demand reduction policy measures is phased in over a five-year period. The phase-in period follows WHO assumptions [120] that two years of planning and development are required before policies are up and running, followed by three years of partial implementation that are reflective of the time that is needed to roll out policies, and work up to full implementation and enforcement.

**Tobacco taxes.** The impact of cigarette tax increases on revenue and cigarette use prevalence was estimated using an Excel-based tool developed to analyse the impact of tax increases on a fixed population cohort. The tool is populated with data, including on current cigarette smoking prevalence, the tax structure and applied tax rates, cigarette prices, demand elasticities, and inflation and income projections (see **Table A1**).

**Table A1: Key parameters used in the tax revenue analysis**

| Parameter name | Value | Source |
|---|---|---|
| Price elasticity of demand | -0.85 | Nayab et al (2017). Estimating the price elasticity for cigarette and chewed tobacco in Pakistan: evidence from microlevel data [95] |
| Prevalence elasticity of demand | -0.42 | Goodchild et al (2016). Modelling the impact of raising tobacco taxes on public health and finance [121] Assumption – half of price elasticity |
| Income price elasticity of demand | 0.32 | Nargis et al (2021). Price, Income, and Affordability as the Determinants of Tobacco Consumption: A Practitioner's Guide to Tobacco Taxation [96] |
| Income prevalence elasticity of demand | 0.16 | Assumption – half of income price elasticity |
| Projected real income growth rate* | 4.6% | International Monetary Fund (2020). Real GDP Growth - Annual percent change [97] |

* Projected real income growth is used as a proxy for wage growth. The International Monetary Fund projects [97] real GDP growth at an average of 3.4 percent annually through 2025.

The investment case analysis examines a tax increase scenario in which Pakistan chooses to enact strong tax increases. In the hypothetical scenario, Pakistan's current tax structure and rates stay the same, with the exception that in real terms, the specific excise tax is increased from current rates (PKR 33 per pack) to PKR 48 in 2027.

In the scenario, the price net of taxes remains static (full pass through of the tax increase). **Table A2** breaks down cigarette pack price components from 2023 to 2027 under the described scenario. For the main investment case analysis, additional specific excise taxes triggering real price increases of an average of 5.6 percent annually are modeled from 2028 to 2037, bringing the total tax share to 81 percent by the end of the analysis and the excise tax share to 64 percent.

In February 2023, the Government of Pakistan enacted the Finance (Supplementary) Act, 2023, containing provisions to further increase taxes including the FED on locally produced cigarettes [57], [58]. As this 2023 tax increase was established after the modelling was done, the baseline tax scenario used in the modelling was from the *WHO Report on the Global Tobacco Epidemic, 2021* with total taxes representing 61 percent of the retail price of the most sold brand of cigarettes [53].

**Table A2: Projected cigarette pack price in the tax increase scenario, 2023-2027 (PKR, in real terms)**

| Price component | 2023 | 2024 | 2025 | 2026 | 2027 |
|---|---|---|---|---|---|
| Price net of taxes | 31.4 | 31.4 | 31.4 | 31.4 | 31.4 |
| Specific excise | 33.0 | 33.0 | 37.0 | 45.0 | 48.0 |
| Ad valorem | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Value added tax | 11.6 | 11.2 | 12.3 | 13.6 | 14.2 |
| Other taxes | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Final consumer price * | 80.0 | 80.0 | 85.0 | 94.0 | 98.0 |
| * Figures subject to rounding. | | | | | |

The impact of tax increases on revenue and cigarette use prevalence is dependent on prevailing elasticities: the extent to which individuals change use of a product (e.g., decrease consumption or quit) because of changes in the price of a tobacco product. Changes are calculated following Joosens and colleague's (2009) [122], who use a log-log function to

ensure large price increases do not result in implausible reductions in consumption or prevalence. Below, **Equation A1** provides an example of calculations to ascertain the impact of a change in price on smoking prevalence, considering changes in income.

**Equation A1: The impact of changes in price on smoking prevalence**

$$\Delta SP_i = SP_{i-1} * ((EXP\left(\varepsilon p * LN(op_{np})\right)) - 1 - \left[\frac{1+\varepsilon_i\left(\frac{GDP_2-GDP_1}{GDP_2+GDP_1}\right)}{1-\varepsilon_i\left(\frac{GDP_2-GDP_1}{GDP_2+GDP_1}\right)}\right]$$

Where:
SP = smoking prevalence (# of smokers) in year i
Ɛp = prevalence elasticity
Op_np = the ratio of the old price of a pack of cigarettes to the new price after tax increases
Ɛi = income elasticity
GDP = Gross domestic product in year

There are several limitations to the tax analysis. First, the tax tool assumes that the price and tax structure of the most sold brand of cigarettes is representative of the market, and it does not incorporate other market segments (high or low-end cigarettes). More detailed models that account for switching between segments or between products (e.g., movement to hand-rolled cigarettes) would capture nuance helpful to framing tobacco tax policy and estimating impact. Second, the analysis assumes a full pass through the tax increases. This assumption reflects a "middle ground" approach, but the tobacco industry may increase or decrease prices in reaction to the price increase.

**Brief advice to quit tobacco.** We calculate the effect of scaling up the provision of brief advice to quit tobacco use at the primary care level. First, we calculate the baseline population quit rate (PQR, the percent of smokers who quit annually) drawing on previously published methods by Levy and colleagues (2010) [119]. The PQR is calculated (see **Equation A2**) using three parameters- quit attempts; treatment utilization rates (i.e. counselling, pharmaceutical therapy); and treatment effectiveness.

**Equation A2: Calculating Population Quit Rate, from Levy et al (2010) [109]**

$$PQR = QA * \sum_{i=1...4} (TxUse_i * TxEff_i)$$

Where:
PQR = Population quit rate
QA = % of smokers who make a quit attempt at least once annually
TxUse = the percent of those who make a quit attempt who use treatment category i
TxEff = The percent of those who use a given treatment who succeed in quitting annually (Treatment efficacy)
i = is one of four treatment categories: 1) no evidence-based treatment; 2) counselling; 3) pharmacological treatment (e.g. nicotine replacement therapy), or 4) both counselling and pharmacological therapy.

Again following Levy et al (2010), "to account for the effect of multiple quit attempts among those who fail at their first attempt, it was assumed that half of those that make at least one quit attempt per year go on to make a second attempt, and half of those [who make a second attempt] make a third, and so on," and that treatment effectiveness does not change based on whether it is a persons' first quit attempt or a succeeding one.

After establishing baseline PQR, we calculated how the population quit rate would change if provision of brief advice to quit at the primary care level became more prevalent. In this "intervention scenario", over the 15-year time horizon of the analysis, half of all primary health-care providers are trained to provide brief advice to quit to adult tobacco users—a value selected based on evidence of the current intervention coverage gap; on average, in low- and middle-income countries less than half (47.8 percent) of adult smokers who visit a health provider are advised to quit.[26] Once trained, it is assumed that the provider administers the brief advice when they encounter a patient who uses tobacco.

Taking into account the number of primary health-care providers in the country, the patient panel size per provider, adult smoking rates, and the percent of adult smokers who present within the health system for at least one primary care visit per year, in each year of the analysis we calculate the number of adult tobacco users who would encounter a newly trained health provider and receive the brief intervention—which increases the likelihood that an individual makes a quit attempt by 60 percent over baseline levels [119]. With increases in population quit attempts driven by the provision of brief advice, we recalculate PQR to estimate the number of smokers who quit as a result of the intervention. Data used to inform these calculations are shown in **Table A3**.

**Table A3: Provision of brief advice – key parameters to calculate intervention impact**

| Parameter name | Value | Source |
|---|---|---|
| **Population quit rate (PQR)** | | |
| Annual quit attempt rate (QA) | 24.7% | Pakistan Health Research Council (2016). Global Adult Tobacco Survey Pakistan 2014 [123] |
| Increase (%) in QA as a result of receiving brief advice | 60% | Levy et al (2019). Modelling the impact of smoking-cessation treatment policies on quit rates [119] |
| **Treatment use (Tx Use)** | | |
| No evidence-based treatment | 76.2% | Pakistan Health Research Council (2016). Global Adult Tobacco Survey (GATS) Pakistan 2014 [123] |
| Pharmaceutical assistance | 8.2% | Pakistan Health Research Council (2016). Global Adult Tobacco Survey (GATS) Pakistan 2014 [123] |

26 Analysts pulled data from GATS surveys conducted between 2009 to 2018 and averaged values from low- and middle-income countries.

| | | |
|---|---|---|
| Counselling | 13.8% | Pakistan Health Research Council (2016). Global Adult Tobacco Survey (GATS) Pakistan 2014 [123] |
| Both pharmaceutical assistance and counselling | 1.7% | Pakistan Health Research Council (2016). Global Adult Tobacco Survey (GATS) Pakistan 2014 [123] |
| **Treatment effectiveness** | | |
| No evidence-based treatment | 7% | Levy et al (2019). Modeling the impact of smoking-cessation treatment policies on quit rates [119] |
| Pharmaceutical assistance | 15% | Abrams et al (2010). Boosting population quits through evidence-based cessation treatment and policy [124]** |
| Counselling | 12% | Abrams et al (2010). Boosting population quits through evidence-based cessation treatment and policy [124]** |
| Both pharmaceutical assistance and counselling | 22% | Abrams et al (2010). Boosting population quits through evidence-based cessation treatment and policy [124]** |
| % of adult smokers who visit primary care clinic annually | 43% | Average values from GATS of LMICs conducted between 2009 to 2018* |
| % of smokers who relapse after successfully quitting | 60% | García-Rodríguez et al (2013). Probability and predictors of relapse to smoking: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) [125] |
| Number of primary care health providers | 140 | WHO (2021). Global Health Observatory [126]*** |
| Annual patient panel size per health provider (# of patients) | 550 | Altschuler et al (2012). Estimating a Reasonable Patient Panel Size for Primary Care Physicians With Team-Based Task Delegation [127]**** |

* Compared to quit attempts that are made with no assistance from any form of evidence-based therapy, pharmaceutical assistance is 100 percent more effective, counselling 60 percent more effective, and combined therapy 200 percent more effective
** Sum of two indicators in the WHO Global Health Observatory (GHO) for the latest year for which information was available: 1) number of general physicians and 2) number of nursing personnel. Given that specific estimates for primary care nursing personnel are not given from the source, we assume the proportion of primary care nurses is the same as the proportion of generalist doctors to all doctors as given in the GHO.
*** Study results show that a primary care health provider working under a nondelegated model of care can reasonably care for a panel of 983 patients in a year and that in a conservative scenario where non-physician providers assume some responsibility for care patient panel sizes can expand to 1,387 patients. In most countries, a nondelegated model of care is the status quo. However, in this analysis, nurses are trained to offer brief advice and assume some responsibility for administering it. Therefore, a patient panel size is likely to be somewhere in the range of 983 to 1,387 patients. We assume a panel size of 1,100 and that an individual practitioner on the team covers half of the patients (550) per year.

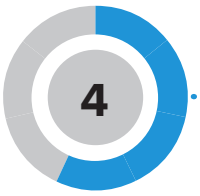
**Summary: the impact of tobacco demand reduction measures.** The impact sizes of all policy measures examined in the investment case are displayed in **Table A4**. Additional information on their derivation can be found in the *Technical Appendix*.[27]

27 Available upon request.

**Table A4: Impact size: Relative reduction in the prevalence of current smoking by tobacco control policy/intervention, over a period of five (2023-2027) and 15 years (2023-2037)**

| WHO FCTC Policy Actions | Relative reduction in the prevalence of current smoking | |
|---|---|---|
| | First 5 years (2023-2027) | Over 15 Years (2023-2037) |
| *Tobacco Control Package* (all policies/interventions implemented simultaneously)* | **19.5%** | **39%** |
| *Increase cigarette taxation (WHO FCTC Article 6)* | 8.0% | 22% |
| *Create smoke-free public and work places (WHO FCTC Article 8)* | 1.2% | 2.0% |
| *Implement plain packaging of tobacco products (WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)* | 2.4% | 4.0% |
| *Enact and enforce a comprehensive TAPS ban (WHO FCTC Article 13)* | 8.9% | 14.8% |
| *Scale up of brief advice to quit for tobacco users in primary care clinics (WHO FCTC Article 14)* | 0.1% | 1.0% |

* The combined impact of all interventions is not the sum of individual interventions. Following Levy and colleagues' (2018) "effect sizes [are applied] as constant relative reductions; that is, for policy i and j with effect sizes PRi and PRj, (1-PR ii) x (1-PR j) [is] applied to the current smoking prevalence" [93].




**STEP 4**

Estimate the impact of changes in smoking prevalence on tobacco-attributable health outcomes and economic costs.

To analyse the impact of policy measures on reducing the health and economic burden of smoking, the investment case calculates and compares two scenarios. In the "status quo scenario", current efforts are "frozen", meaning that, through the year 2037 (end of the analysis), no change occurs from the tobacco control provisions that are currently in place. In the "intervention scenario", Pakistan implements new tobacco measures or intensifies existing ones, to reduce the prevalence of smoking. The difference in health and economic outcomes between the "status quo" and "intervention scenarios" represents the gains that Pakistan can achieve by taking targeted actions to reduce tobacco use.

The marginal effects of the policies are calculated using the status quo scenario as the comparison group. To calculate marginal effects, the model subtracts the outcome (risk factor attributable deaths, health-care expenditures, etc.) under the intervention scenario from the same outcome under the status quo scenario. The difference between the two outcomes is the amount of change in the outcome associated with the policy.

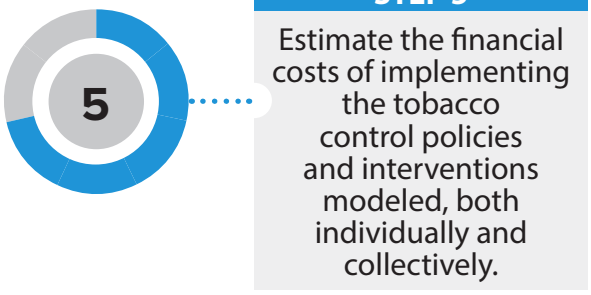
**Marginal Effects** = Outcome Base Scenario — Outcome Intervention Scenario

Marginal effects are calculated as follows for each outcome:

- **Health outcomes:** To calculate the reductions in mortality and morbidity due to implementation of the policy measures, forecasted changes in smoking prevalence are applied directly to the GBD risk factor attributable outcomes from the status quo scenario. This means that the model adjusts the risk factor attributable outcomes for mortality and morbidity as reported by GBD based on year-over-year relative changes in smoking prevalence for each outcome.

- **For healthcare expenditures**, the model applies forecasted annual relative changes in smoking prevalence for each intervention scenario to the SAFs. SAFs are adjusted in proportions equal to the relative change in smoking prevalence for each intervention scenario.

- **Workplace smoking outcomes** are recalculated substituting actual (status quo) smoking prevalence for estimated annual smoking prevalence for each of the intervention scenarios that are modeled.




The financial costs to the government of implementing new measures—or of intensifying or enforcing existing ones—is estimated using the WHO NCD Costing Tool. Full explanations of the costs and assumptions embedded in the WHO NCD Costing tool are available [120].

The Costing Tool uses a “bottom up” or “ingredients-based” approach. In this method, each resource that is required to implement the tobacco control measure is identified, quantified,

and valued. The Tool estimates the cost of surveillance, human resources—for program management, transportation, advocacy, and enacting and enforcing legislation— trainings and meetings, mass media, supplies and equipment, and other components. Within the Costing Tool, costs accrue differently during four distinct implementation phases: planning (year 1); development (year 2); partial implementation (years 3-5); and full implementation (year 6 and onward).

Across these categories, the Costing Tool contains default costs from 2011, which are sourced from the WHO CHOICE costing study. Following Shang and colleagues, the Costing Tool is updated to reflect 2020 costs by updating several parameters: the US$ to local currency unit exchange rate (2020), purchasing power parity (PPP) exchange rate (2020); GDP per capita (US$, 2020); GDP per capita purchasing power parity (PPP, 2020); population (total, and share of the population age 15+, 2020); labour force participation rate (2020); gas per liter; and government spending on health as a percent of total health spending (2019) [128]. Unless government or other in-country parameters are received, data are from the World Bank database, with the exception of data on the share of government health spending and population figures. The share of government spending on health as a percent of total health spending is derived from the WHO Health Expenditures database, and population figures are from the UN Population Prospects.

To cost the scale up of the provision of brief advice to quit tobacco use, the analysis adds to the programmatic costs embedded in the WHO Costing Tool by including costs to train health providers and the direct costs of the primary care visits in which the brief advice is administered. Over the 15-year time horizon of the analysis, half of all primary care health providers are trained to administer brief advice to quit tobacco.[28] Based on WHO's training package for treating tobacco dependence in primary care [130], we assume that training sessions last 2.5 days, are conducted with a maximum of 30 participants, and are led by a team of two facilitators. We further assume that the training occurs in person in a rented facility space. Costs of training include those to rent the facility,[29] pay facilitators, and provide per diems to facilitators and attendees, and we also assume that trainees (doctors and nurses) are compensated for their time at their wage rate.[30] Once trained, providers are assumed to provide brief advice if they encounter a patient who smokes. The cost of providing brief advice during primary care visits is based on modeled, country-specific estimates from WHO-CHOICE of the cost or primary care outpatient visits [132]. The derivation of these estimates is detailed elsewhere [133], but in overview, the estimates reflected the "hotel cost" of a 10 minute visit[31] to a health facility with beds. We updated the estimates to 2020 local currency

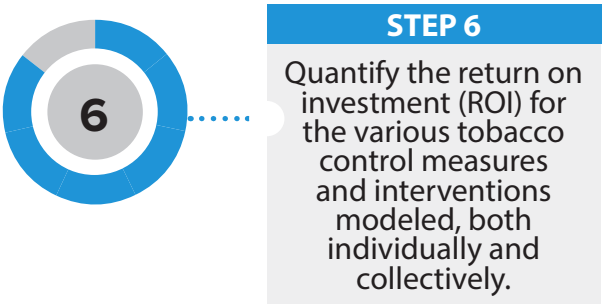
28 The analysis assumes a 10 percent of health workers turn over annually [129].

29 Rental costs per square foot are obtained from the WHO Costing Tool with the room size estimated is based on square feet per person estimates for collaboration rooms [131].

30 Compensation costs for trainers, per diem estimates, and provider salaries are obtained from the WHO Costing Tool.

31 The analysis assumes that the mean duration of a clinic visit is 10-minutes, following guidance from the WHO NCD Costing Tool.

units, using 2010 PPP conversion factors and local consumer price indices [134]. For the purpose of the investment case, administration of the 5A's (Asl. Advise, Assess, Assist and Arrange) brief intervention is assumed to take 10 minutes [135]. Following WHO CHOICE methodology, we estimate the cost of those extra 10 minutes as an extra 21 percent of the original cost of the primary care visit.




The return on investment (ROI) analysis measures the efficiency of tobacco control investments by dividing the discounted monetary value of health gains from investments by their discounted respective costs.

ROIs were calculated for each of the five tobacco control policy actions modeled, and for the five interventions together as a package. Estimates from Steps 3 and 4 were used to calculate ROIs at 5- and 15-year intervals.

$$\text{Return on investment (ROI)} = \frac{\text{Benefits of Intervention/Policy}}{\text{Costs of Implementing Intervention/Policy}}$$

## A1.4 Equity analysis

We used elasticity of smoking participation by income group to assess the equity implications of increases in cigarette taxation. No studies were identified that examine the elasticity of smoking participation in Pakistan. Instead, we use the average of income-group-specific elasticities in low- and middle-income countries, as compiled in a World Bank policy research working paper [136]. The working paper provides elasticities by deciles. To apply the elasticities to the smoking prevalence data available for Pakistan, which are presented as quintiles, we take the average of the first and second decile to obtain the elasticity for the first quintile, and so on. The average elasticity for each quintile from the working paper that are used to calculate reductions in smoking prevalence and smoking attributable mortality are shown in **Table A5** below.

**Table A5: Average elasticities used in investment case equity analysis**

| | Quintile 1 | Quintile 2 | Quintile 3 | Quintile 4 | Quintile 5 |
|---|---|---|---|---|---|
| Price elasticity | -0.60 | -0.49 | -0.41 | -0.36 | -0.30 |

*Source: Average of income-group-specific elasticities in low- and middle-income countries, as compiled in a World Bank policy research working paper (Fuchs et al (2019). Distributional Effects of Tobacco Taxation: A Comparative Analysis. Accessible at https://openknowledge.worldbank.org/handle/10986/31534 ) [136].*

The source for smoking prevalence used in the main investment case model (the Pakistan 2014 Global Adults Tobacco Survey), does not contain prevalence disaggregated by income quintile. For the equity analysis, we use prevalence by income quintile obtained from the 2017–2018 Demographic and Health Survey (DHS) [137]. We adjust the prevalence by income quintile proportionally by the difference between overall prevalence in the DHS and WHO Report.

## A1.5 Summary of WHO FCTC demand-reduction measure status

**Figure 3 in the main text** is based on data from the *WHO Report on the Global Tobacco Epidemic, 2021* [53]. In the figure, the level-of-implementation categories of "no/little implementation", "partial implementation", "moderate implementation", and "high-level implementation" are mapped to the descriptions in **Table A6**, as specified and further detailed in Technical Note I of the WHO report (see page 119).

Investment case analysts assigned scores between 0 to 3 for each demand reduction measure, depending on the level of implementation. For four measures—graphic warning labels, plain packaging, mass media campaigns, and tobacco cessation—we assigned whole number scores (i.e. 0, 1, 2, or 3) that mapped to the four levels of implementation described above and detailed in **Table A6**. For increases in cigarette taxation, smokefree public and work places, and TAPs bans, we adjusted the level-of-implementation score creating a decimal value as follows:

- For 1) smoke-free public places and workplaces and 2) TAPS bans, we adjusted the score to account for reported levels of compliance in the WHO Global Report on the Tobacco Epidemic (Compliance Score). Following previously published assumptions by Levy and colleagues (2013), we assumed that respectively 25 percent and 50 percent of the effect of these measures depends on levels of compliance [138]. Thus, for a country with "moderate implementation" of TAPS bans but a compliance score (as detailed in the WHO Report on the Global Tobacco Epidemic) of 5 out of 10, we calculated the score as follows: Measure Score – (0.5*Compliance Score/10) = 2 – (0.5*(5/10) = 1.75. For countries that did not report a compliance score we assumed the average of compliance scores worldwide.

- For 3) cigarette taxation, all countries in which the total tax share equaled 75 percent or above received a score of 3. All countries below that mark were assigned a score as follows: 3*(Total tax share/0.75). Thus, a country with a total tax share of 35 percent received a score of 1.4 (3*(.35/.75)).

Ultimately, most measures are weighted equally (counting as 3 points if fully implemented) except for plain packaging (counting as 1 point if fully implemented). Analysts selected 1 point for plain packaging because: 1) Unlike for the other measures, plain packaging operates on a 0,1 scale—either the measure is in place or it is not (i.e. there are no gradations of the policy—there is little benefit to mandating that half of the package is "plain" while the rest is open to colouring or other attributes); 2) In the WHO Report on the Global Tobacco Epidemic plain packaging is scored as a "star" on top of the graphic warning labels acting as a supportive add on to other labelling requirements.

The total score a country can receive for implementation of the key demand reduction measures (i.e. composite tobacco control score) is 19. A country with a composite tobacco control score of 12/19 may be said to have implemented about 63 percent of the WHO FCTC key demand reduction measures agenda.

**Table A6: Definition of WHO FCTC implementation status in Figure 3 (main text)**

| WHO FCTC demand-reduction measure | No/little implementation | Partial implementation | Moderate implementation | High-level implementation |
|---|---|---|---|---|
| Increase cigarette taxation to reduce the affordability of tobacco products *(WHO FCTC Article 6)* | 0% of retail price is tax, or no data is reported. | ≥ 25% and <50% of retail price is tax. | ≥ 50% and <75% of retail price is tax. | ≥ 75% of retail price is tax. |
| Create smokefree public and work places to protect people from the harms of tobacco smoke *(WHO FCTC Article 8)* | Complete absence of ban, or up to two public places completely smoke-free, or no data are reported. | Three to five public places completely smoke-free. | Six to seven public places completely smoke-free. | All public places completely smoke-free (or at least 90% of the population covered by complete subnational smoke-free legislation). |
| Require tobacco packaging to carry graphic health warnings describing the harmful effects of tobacco use *(WHO FCTC Article 11)* | No warnings or small warnings, or data not reported. | Medium size warnings missing some appropriate characteristics or large warnings missing many appropriate characteristics. | Medium size warnings with all appropriate characteristics or large warnings missing some appropriate characteristics. | Large warnings with all appropriate characteristics. |
| Implement plain packaging of tobacco products *(WHO FCTC Guidelines for implementation of Article 11 and WHO FCTC Guidelines for implementation of Article 13)* | Plain packaging is not mandated. | - | - | Plain packaging is mandated. |

| WHO FCTC demand-reduction measure | No/little implementation | Partial implementation | Moderate implementation | High-level implementation |
|---|---|---|---|---|
| Promote and strengthen public awareness about tobacco control issues and the addictive nature and harms of tobacco use through mass media information campaigns *(WHO FCTC Article 12)* | No national campaign conducted between July 2018 and June 2020 with a duration of at least 3 weeks, or no data is reported. | National campaign conducted with one to four appropriate characteristics. | National campaign conducted with five to six appropriate characteristics. | National campaign conducted with at least seven appropriate characteristics including airing on television and/or radio. |
| Enact and enforce a comprehensive ban on all forms of tobacco advertising, promotion, and sponsorship – TAPS *(WHO FCTC Article 13)* | Complete absence of ban, or ban that does not cover national television, radio and print media. | Ban on national television, radio and print media only. | Ban on national television, radio and print media as well as on some but not all other forms of direct and/or indirect advertising. | Ban on all forms of direct and indirect advertising (or at least 90% of the population covered by subnational legislation completely banning tobacco advertising, promotion and sponsorship). |
| Develop infrastructure to support tobacco cessation and treatment of tobacco dependence *(WHO FCTC Article 14)* | None, or no data is reported. | NRT and/or some cessation services (neither cost-covered). | NRT and/or some cessation services (at least one of which is cost-covered). | National quit line, and both NRT and cessation services routinely cost-covered. |

*Source:* Information in this table is based on the *WHO Report on the Tobacco Epidemic, 2021* [53]

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